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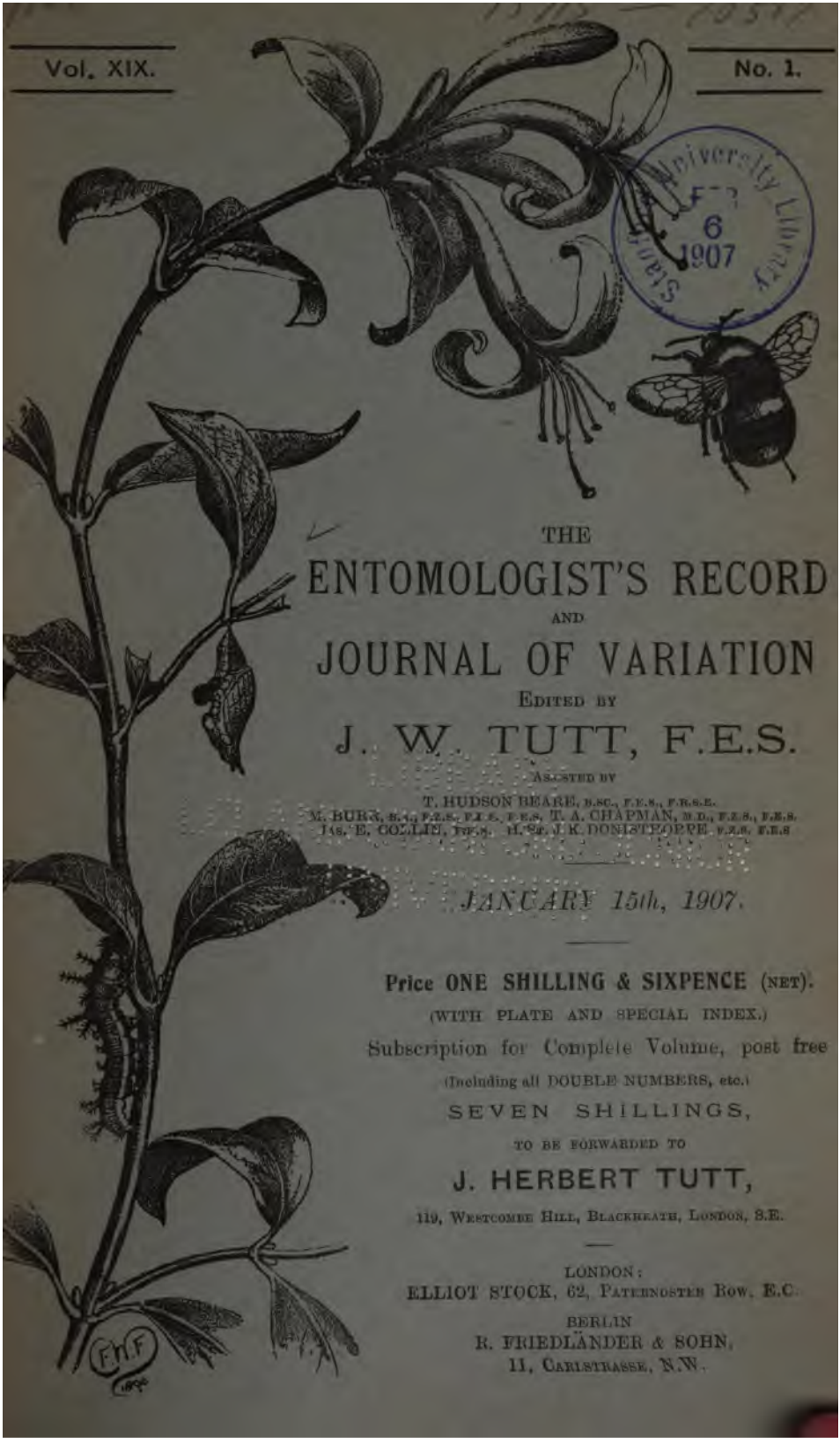
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THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

EDITED BY

J. W. TUTT, F.E.S.

ASSISTED BY

T. HUDSON BEARE, B.SC., F.E.S., F.R.S.E.
M. BURR, B.A., F.Z.S., F.E.S., T. A. CHAPMAN, M.D., F.Z.S., F.E.S.
JAS. E. COLLIN, F.E.S., H. ST. J. K. DONISTHORPE, F.Z.S., F.E.S.

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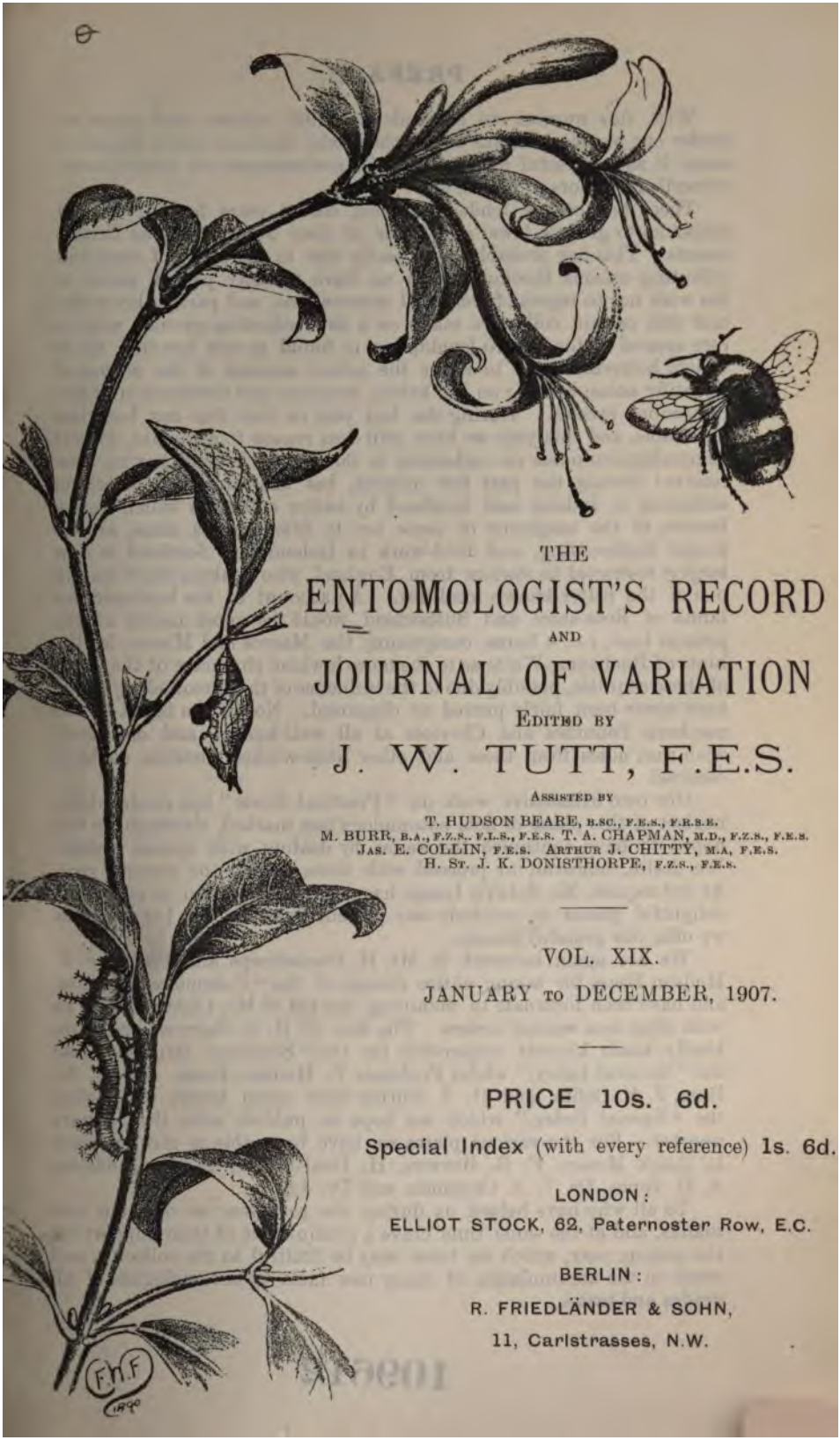
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PREFACE.

With this number we conclude our 19th volume, and again we tender our heartiest thanks to all those who have so kindly helped to make it as successful and useful as its predecessors—to contributors, subscribers, donors of plates, etc.

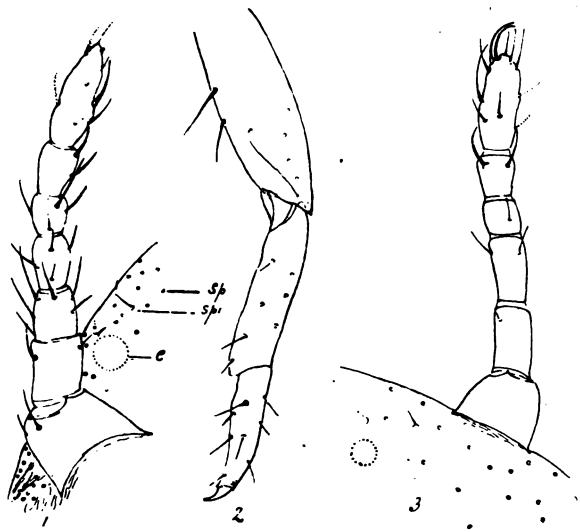
There has been a tendency during recent years for our British collectors to give us fewer and fewer of their observations on British insects. This has probably been partly due to the series of wretched collecting-seasons through which we have recently passed, partly to the wish not to repeat oft-recorded observations, and partly also to the raid that certain collectors make on a new collecting-ground, when a rare species of the Macro-lepidoptera is found in new haunts; all of which, however, tends to lower the actual amount of the output of scientific notes, bearing on the habits, habitats, and distribution of our indigenous species. During the last year or two this has been less noticeable, and this year we have still less reason to complain, several comprehensive notes on collecting in the British Islands having been received during the past few months, but the interesting notes on collecting in Ireland and Scotland by native collectors which were a feature of the magazine of some ten to fifteen years since, are no longer forthcoming, and field-work in Ireland and Scotland is now largely restricted to visitors from England who make a short stay in one of the better-known localities. An account of the lepidopterous fauna of Ross-shire and Sutherland would be most useful at the present time, *i.e.*, a fauna comprising the Macros and Micros, for the hints of Buchanan-White as to the more lowland character of the fauna of these counties, possibly due to the influence of the surrounding ocean, have never been fairly proved or disproved. Nor is the fauna of the northern Pennines and Cheviots at all well-known, and one could wish that notes from these and other little-worked districts could be received.

Our own exhaustive work on "Practical Hints" has rendered our neglect of this phase of field entomology less marked, although we had hoped to have continued the series by dealing with special groups. We desire, however, to proceed with these during the coming year. At our request, Mr. Selwyn Image has generously written us one of his delightful poems to conclude our present volume; for his kindness we offer our grateful thanks.

We are again indebted to Mr. H. Donisthorpe and Professor T. Hudson Beare for taking entire charge of the "Coleoptera" section, and have been fortunate in obtaining the aid of Mr. Chitty to help us with other less-worked orders. The Rev. C. R. N. Burrows has again kindly made himself responsible for the "Societies' Reports" and the "General Index," whilst Professor T. Hudson Beare, Messrs. M. Burr, J. E. Collin, and H. J. Turner have again kindly undertaken the "Special Index," which we hope to publish with the January number. For the various plates we have been able to give, we have to thank Messrs. F. B. Browne, H. Donisthorpe, H. M. Edelsten, A. H. Jones, Dr. T. A. Chapman, and Dr. Joy.

To all who have helped us during the past year we offer our best thanks, and at the same time crave a continuance of their support for the coming year, which we trust may be fruitful to the collector, and result in the accumulation of many new facts by entomologists of all grades and tastes.

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NEW SPECIES OF MYRMECOPHILOUS COCCIDS.

The Entomologist's Record AND JOURNAL OF VARIATION.

VOL. XIX. No. 1. JANUARY 15TH, 1907.

The Identity of the British Nonagria neurica (*with plate*).

By H. M. EDELSTEN, F.E.S.

Hübner figured (*Sammlung Europäischer Schmetterlinge*, plates 82 and 144) two insects, *viz.*:—Plate 82, fig. 381 (upperside only), under the name *neurica*, and Plate 144, figs. 659-661 (♂, ♀, and underside of a dark reddish-brown insect, showing the *central spot beneath*), which he also called *neurica*.

In 1816, Ochsenheimer, in his "Systema Glossatorum Europæ" catalogues (*Die Schmett.*, iv., p. 82) *N. neurica*, Hb., and, as quoted by Treitschke,* considers *neurica*, Hb.† = the reed-coloured form without marks on the underside. In his collection he has a true *neurica*, Hb., designated as such by a label written with his own hand; beneath this specimen is a typical *arundineta*, Schmidt, which has a label, on which is written, in Ochsenheimer's handwriting, "An eadem cum præcedente? sub nomine *Noctua dissoluta*."

In 1825, Treitschke, after Ochsenheimer's death, received (*Die Schmett.*, v., pt. 2, p. 319) *darker insects marked beneath, viz., N. dissoluta.*‡ He thinks Hübner meant to have so called his figs. 659-60. He adds that further consignments proved conclusively that Hübner was right to call *neurica* all the forms marked above (light or dark) and underneath (black-marked or *unmarked*), but, he continues, that all the ranges of colour are *neurica*, and describes the underside as being unmarked, or with central spots. He confuses the two as one species, and must mean that *dissoluta* should be the varietal name for *neurica*, Hb., figs. 659-60; and he ends in describing a larva, which was subsequently proved to be that of var. *arundineta*, Schmidt. In Treitschke's collection there are, under the label *neurica*, five specimens. The first is a *neurica*, Hb., fig. 381; the second, third, and fourth are *arundineta*, Schmidt; and the fifth is the dark *neurica*, Hb., figs. 659-661.

Treitschke says (*Die Schmetterlinge von Europa*, v., pt. 2, p. 319): "*Nonagria* alis anticis flavo vel fusco ferrugineis, vena maculaque medio albicantibus, serie punctorum nigrorum ad marginem externum. Ochsenheimer has referred to Hübner's *neurica* on p. 82 of his *Entwurf.*, and understood by it the reed-coloured form without marks

* I presume Ochsenheimer had said something to Treitschke about this matter.—H.M.E.

† Probably Mazzola had worked this out.—H.M.E.

‡ ? Mazzola had called these *N. dissoluta*, but had not published his observations.—H.M.E.

on the underside, of which there were a few examples in Mazzola's and his own collections under this name, and which came from the Rhine district. Later, we received from thence some very much darker moths, marked on the underside, under the name *N. dissoluta*. They agreed exactly with Hübner's figs. 659-661. It therefore seemed certain that Hübner had repeated the name *neurica* by mistake, whereas *dissoluta* should have been given instead. Further consignments have, since then, conclusively proved that Hübner was right to call all the forms *neurica*, whether marked above, dark or light, and underneath with or without black markings; all are connected by the slightest gradations, and, furthermore, it confirmed what had already been said about the variability of this plain-looking creature. *Neurica* varies in tone from reed-coloured to the deepest yellowish dark-brown, as do also *paludicola* (*geminipuncta*), *typhae*, and others. The head and thorax are coloured like the forewings, the abdomen is lighter, inclining towards grey, that of the ♂ especially long and slender, with yellowish-brown anal tuft. The antennæ are bright yellow, fine, serrate in the ♂. Legs brown-yellow. The forewings are short, broad, pointed at the apex. They vary as mentioned, so much so that the intermediate form connecting the two varieties has lighter and darker parts. On all which are not quite without marks, the broad outer margin is the lightest, and without the black specks which irregularly cover the other parts. The median vein is white longitudinally, bordered with black. Beyond the middle of the wing is a black dot with *white bordering* which is sometimes formed like a figure 3, very rarely with no margin. Before the outer margin a more or less defined double row of dots crosses the vein; there are two dots next to the inner margin, and there is a row of black and white streaks in the other part of the shaded band where the wings usually become darkest as far as the fringes. These are bordered with clear black dots, otherwise lighter than the ground colour and simple. The hindwings are yellowish-white towards the base, more or less dusted with grey posteriorly, with the lunules and smaller lunular marks as a border to the whitish fringes. The underside is yellowish, grey dusted, sometimes unmarked, sometimes with central spots and dots before the fringes, often also with a curved line and a shade almost forming a band before it. The larva is dirty-white with pale red back, lives in the interior of the reeds, and changes in June or July to a pupa, head downwards. The moth appears in four weeks (according to information from Herr Hess, of Darmstadt). In mode of living and changing it resembles the following species, *paludicola* (*geminipuncta*). I only know the district of Darmstadt as its habitat, and there the moth is rather rare."

Duponchel described and figured (*Papillons de France*, vii., pt. 1, p. 85, pl. 106, fig. 2), as *neurica*, the var. *arundineta*, Schmidt. He writes: "The forewings are pale grey-yellowish above, finely dusted with brown, with the two or three middle nervures white, central spot blackish, surrounded with white, and two transverse rows of dots equally blackish, one of which separates the fringe from the outer margin, and the other is placed at an equal distance from this same margin and the central spot above mentioned. The dots of this last row rest on the little lines which correspond with the nervures. The fringe is simple and of the same

colour as the base of the wing. The hindwings above are of the same grey colour as the forewings, but rather paler, of the same colour as the underside of the four wings, which each have a central black spot. The head and collar are of the same grey as the forewings, The body participates in the tinge of the forewings. The antennæ are of a greyish-yellowish and simple in both sexes. The larva is of a dirty white colour, with the back of a pale reddish tinge. It lives in the interior of the reeds. It turns to a chrysalis in June and July, and the moth emerges three or four weeks afterwards. *N. neurica* is rare in France."

In 1840, Boisduval describes (*Genera et Index Methodicus*, p. 134, no. 1081) the dark form of *neurica*, Hb., fig. 659 (? a var. of *neurica*), and names it *hessii*, and says that Hess sent it to him as a variety of *neurica;* he also mentions that Treitschke refers in his synonymy to true *neurica*. He concludes by saying "an rite?" His description reads: "No. 1081. *Hessii*, Boisd. (an var. *neuricae* ?). *Neurica*, Hb., 659. Alæ anticæ nigro-fuscæ, macula reniformi albida, intus fusca; alæ posticæ pallidæ. Dom. Hess, qui abunde Nonagrias circa Darmstadt educit, mihi ut variet *neurica* hanc speciem misit. Dom. Treitschke quoque in synonymia ad *neuricam* genuinam refert. An rite?"

Prof. Hering describes (*Stett. Ent. Zeit.*, iv., no. 11, p. 345), in November, 1843, a larva with light reddish back as that of *neurica*, and says: "I have found the larvæ at the beginning of July in *Arundo phragmites*, when I have been searching for those of *N. paludicola*, often in the very same reed stem. Whereas *paludicola* mostly lives in the lower part of the reed, I find *neurica* always in the upper portion. Then it is always rarer than the former. Its presence is always betrayed by the withered top of the reed. It is distinguished from the larva of *paludicola* by being always more slender, of more delicate structure, and by the light reddish colour of the back. Its rearing indoors was not more difficult than the former. I cut the reed stems beneath the boring and above the joint, as also with *paludicola*, and stand the shortened stems in wet sand. It pupates always towards the end of June and becomes a moth, always earlier than *paludicola*, in the last days of July."

In 1845, Herrich-Schäffer figures (*Schmett. v. Europ.*, ii., p. 244, figs. 347-348, ♀) as *neurica* what Schmidt recognises as *arundineta*. He describes it, and says that it differs from Hübner's fig. 381, which, he says, is "totally defective in its outlines, forewings much too large," as compared with the insect he is figuring. Afterwards, when Schmidt sent him *neurica* and *arundineta* he acknowledges them as two species. He also describes *hessii* and refers to Hübner's illustrations, 657-661, as "much too robust, outline of the wings defective." He says: "No. 189. *Neurica* (Hb. 381).—Totally defective in its outlines, forewings much too large. Fuscotestacea loco stigmatis reniformis annulo albo, fusco repleto. Hindmargin with sharply marked black lunules between the nervures, the outer transverse line indicated by black dots which are shown up by white on both sides. Dark reed-colour, a longitudinal darker ray through the middle of the forewing, before this, towards the costa, some black dots, two indicating the position of the central spot, the third indicating the inner boundary of the front half of the reniform. Hindwings lighter, without

markings. Around Darmstadt, August." "No. 187. *Hessii*, Boisd.; *neurica*, Hb. 659-61.—Much too robust, outline of the forewings defective. Fuscoferruginea, stigmate reniformi versus limbum et marginem interiorem albocincto. Differs from *neurica* in appearance only by the reddish-brown colour of the forewings. The central spot extending more towards the outer margin, its form seems more like the usual reniform, the three dots, however, on its outer border are missing. Darmstadt."

(To be continued.)

Myrmecophilous notes for 1906 (*with two plates*).

By H. St. J. K. DONISTHORPE, F.Z.S., F.E.S.

(*Concluded from* vol. xviii., p. 319.)

Diptera.—*Ceratopogon myrmecophilus*, Egger.—I have this year bred several ♂ s and ♀ s of this rare species out of my observation nest of *Formica rufa* from Weybridge. Mr. Morley tells me he has taken it in Suffolk. It will be remembered that I took it for the first time in Britain a few years ago at Oxshott.

Phyllomyza, n. sp. ?—All the specimens recorded from ants' nests heretofore as *Phyllomyza securicornis*, Fln., are not that species, Mr. Collin tells me, but include two species new to science, one found with *Formica rufa*, and the other with *Lasius fuliginosus*. The former I bred in some numbers from my *F. rufa* nest from Weybridge this year, and have taken it before at Oxshott. The latter I have bred in numbers from my *L. fuliginosus* nest from Wellington College, and have taken it before at Oxshott and Birkdale sandhills. Mr. Collin will shortly describe and figure them.

Scatopse infumata, Hal.—I bred this species this year from my Weybridge *F. rufa* nest.

Scatopse transversalis, n. var.—I bred this species also in numbers from my Wellington College nest of *Lasius fuliginosus*. Last year I took it with the same ant on the Birkdale sandhills.

Phora inaequalis, Wood.—I took this species in plenty with *Lasius fuliginosus*, at Wellington College. It occurred in numbers in the actual nest of the ant (which contained the ants' larvæ), built in the inside of a post, and must have bred there.

Phora pulicaria, Fald.—I bred this species from my Weybridge *F. rufa* nest. Wasmann records it from the same ant's nest.

Limosina curtiventris, Stnh.—I bred this little fly in numbers from my Wellington College *L. fuliginosus* nest. This nest, from which I have taken so many species, consists of several handfuls of *débris* out of the heart of a nest in the root of a birch-tree, full of ants and ant larvæ. As I noticed it also contained numbers of dipterous larvæ, I brought it home and put it into a large glass bowl. I also bred from it several species of *Sciara* in some numbers.

Trineura aterrima, Fab.—I took this species with *L. fuliginosus*, at Wellington College.

Braconidæ.—*Sp.* 1 ?—I took two specimens of a handsome black species, with yellow legs and dusky wings, at Weybridge, in July. I saw several hovering over an anthill (*F. rufa*). They were hovering in the air like birds of prey, and every now and then swooping at the

ants, occasionally they hovered so close to the ants, that the latter tried to reach up to them. *Sp.* 2 ?—I took a specimen in a nest of *Formica rufibarbis* var. *fusco-rufibarbis*, at Whitsand Bay, in September.

CHALCIDIDÆ.—*Spalangia*, sp. ?—I took a specimen of a species of this genus in a nest of *Lasius fuliginosus*, at Wellington College, and have since bred it in numbers from my nest of the same ant, indeed, it is still emerging (November 28th). It is a jet-black species like its host. I have taken, and bred, various other species of *Chalcididae* with ants, but am unable to get even the names of the genera. They no doubt occur as parasites on the ants themselves, and others as parasites on some other inhabitant of the nest.

COCCIDÆ.—Mr. Newstead, has kindly named the *Coccidae* I have taken with ants this year. Two species turn out to be new to science. Mr. Newstead describes them as follows:—

RIPERSIA DONISTHORPEI, n. sp. (pl. i., figs. 1-2).—*Female.*—Antenna stout (fig. 1), relatively long; of seven segments, the last much the longest, but not wider than the 6th; all the segments have several rather long slender hairs, in addition to these the 6th segment has a long slender spine near the apex on the inner lateral margin, and there are two similar spines on the 7th, and possibly three others, but only the basal attachments are left in the specimen. Eyes hemispherical, placed on a line just behind the insertion of the antennæ. Mentum monomerous; loop of rostral filaments short, about twice the length of the mentum. Legs (fig. 2) relatively long and stout; ventral hair to posterior trochanter a little more than *three-fourths the length of the femur*, very slender; digitules to tarsi absent; claws short. Anal orifice with eight long hairs. Anal lobes indicated by a single stout hair and three to four short spines. Stigmata large. Dermis (fig. 1) with a few scattered hairs; tubular spinnerets short, orifice circular, small, they are much more numerous at the margins, and especially so at the posterior extremity, but in the region of the anal orifice, dorsally, they are almost entirely replaced by much larger, and apparently non-tubular, spinnerets. Length, 2·50mm.; width, 1mm. (Newstead).

The distinctive features of this species are the unusually elongated form, the number of hairs to an anal orifice, and the great length of the ventral hair to the trochanter. *Habitat.*—In a nest of *Ponera contracta*, at Charing, Kent.

RIPERSIA FORMICARII, n. sp. (pl. i., fig. 3).—*Female adult.*—Very short, ovate, narrowed in front, widely rounded behind; highly convex above, flat beneath; segmentation of the dorsum distinct; cephalo-thoracic margin with five constrictions; abdominal extremity with a central emargination, and one bilateral, deep, indentation. Colour, in alcohol, dull purple-brown, slightly mealy. Antenna (fig. 3) of six segments, 1st, 2nd, and 3rd almost equal in length, each about two-thirds the length of the 6th; 4th and 5th shortest; 6th longest and slightly wider than the 4th, with a strongly-curved spinose hair near the tip. Eyes small, hemispherical, placed considerably behind the insertion of the antennæ. Legs rather long, slender; anterior tarsus a little shorter than the tibia. Anal lobes obsolete. Anal orifice with six hairs. Dermal spinnerets very minute, numerous. Mentum bimerous; rostral loop a little longer than the mentum. Length, 1·75mm.; width, 1·50mm. Larva (matured) elongate. Antenna much swollen at the apex; 1st-5th segments short, almost equal in length; apical segments longest, a little longer than 3rd, 4th, and 5th together. Legs long, stout; digitules to claws and tarsi simple. Anal lobes small but distinct, each with one long hair and two or three very short slender ones (Newstead).

A single female and fully matured larva were found associated with *Lasius flavus*, at Charing, Kent. Easily recognised by its short rotund form and the character of the antennæ.

Ripersia tomlinii, Newstead.—Two immature females, associated with *Lasius flavus* and *L. niger*, Isle of Wight. These were two of a number of specimens I took with these species of ants at Blackgang,

Isle of Wight, in October last. Mr. Forsyth has also taken it again at Weymouth, where I first discovered it in Britain.

Aphidæ.—*Forda formicaria*, Heyd.—I took this species in a nest of *Lasius niger*, at Harlech, last June. Hardy took it in *Myrmica* nests in Berwickshire, and Lord Avebury with *L. flavus* at Beckenham. Buckton mentions that it is a common companion of ants. Monsieur H. Schouteden records it with *Myrmica rugulosa*, Nyl., *Tetramorium caespitum*, *Lasius flavus*, and *L. niger* in Belgium. Father Wasmann with most small ants, especially *L. flavus*.

Trama troglodytes, Heyd.—I took a specimen of this "plant-louse" in the same nest as the above. In ants' nests at Beckenham (Lord Avebury); Grampian Hills (Hardy); common with *Myrmica rubra* and *Lasius fuliginosus* in Berwickshire (Hardy); with *Myrmica rubra*, *M. rugulosa*, and *Lasius niger* in Belgium (Schouteden).

Tetraneum (*Tychaea*) *setariae*, Pass.—I have taken this species with *Formica rufibarbis* var. *fusco-rufibarbis* at Whitsand Bay, and *Lasius flavus* at Ashstead. In ant-hills at Beckenham (Buckton); in nests of *Tetramorium caespitum* in Bohemia (Wasmann). I took it in some numbers at Ashstead by cutting open the turf mounds of the ant.

Aphis plantaginis, Schrk.—I took this *Aphis* in June, 1902, at Rosbeigh, Co. Kerry, on plants in a nest of *Lasius niger*. Mons. Schouteden, who has taken it with *Lasius flavus* in Belgium,* points out that the ants carry its eggs into their gallaries to pass the winter, and when they hatch, replace them on the roots, or the shoots, of *Chrysanthemum*, *Bellis*, *Plantago*, *Achillea*, etc. I am much indebted to Mons. H. Schouteden for having kindly identified the above species for me.

Acarina.—*Glyphopsis coccinea*, Mic.—I took this species in some numbers in a nest of *Formica fusca* at Barmouth, last June.

Glyphopsis bostocki, Mic.—Mr. Morley took a specimen of this species in a nest of *Lasius flavus* in his garden at Monk's Soham.

Glyphopsis formicariae, Lubbock.—I took this mite in a nest of *Lasius flavus* at Harlech, last June.

Leolaps cuneifer, Mic.—I took this species new to Britain in numbers with *Lasius fuliginosus* at Wellington College. Father Wasmann has taken it with the same ant in Holland, and Mr. Michael with *Camponotus* in the Tyrol.

Leolaps myrmecophilus, Berl.—I took this species with *Formica fusca* at Barmouth, with *F. sanguinea* at Woking, and specimens taken with the former host at Niton, Isle of Wight, Mr. N. D. F. Pearce thinks are also this species.

Uropoda ricasoliana, Berl.—Mr. Pearce thinks that a specimen taken by me with *Lasius fuliginosus* at Wellington College, is this species. It was taken with the same ant in Holland by Father Wasmann.

Antennophorus grandis, Berl.—I took a fair number of an *Antennophorus* on the ants in a nest of *Lasius fuliginosus* at Wellington College, which Father Wasmann suggests are this species, in which case it is new to Britain. Our other species, *Antennophorus uhlmanni*, Hall, has only been taken in Britain at Land's End, by Mr. Michael, in ants' nests, the ants would not be *L. fuliginosus*. Father Wasmann has

* Les Aphides Radicicoles de Belgique et les Fourmis.

taken *uhlmanni* with *L. flavus* and *L. niger* in Holland. These large mites are generally found on the underside of the head of the ant. I have found two specimens on one ant. Mr. A. D. Michael has some of my specimens, as also other species, but he has not yet had time to work them out. My best thanks are due to him, as also to Mr. N. D. F. Pearce, for the names of the above.

CRUSTACEA.—Although *Platyarthrus hoffmansegii* appears to be our only true ants' nest species, the following records are of interest :—

Porcellio scaber, Latr.—I took specimens of a fine red variety with *Formica sanguinea* at Woking.

Porcellio ratzeburgi, Brandt.—Taken in numbers with *Formica rufa* at Corbridge, in Northumberland, by Mr. R. S. Bagnall, new to Britain.

Armadillium opacum, Koch.—I took several specimens of this new species, to Britain, in the heart of a nest of *Lasius fuliginosus* at Wellington College. I am indebted to Mr. Bagnall for the names of these " wood-lice."

EXPLANATION OF PLATE XV (VOL. XVIII).

The parts of the ants lettered are as follows :—

A. Pronotum. B. Mesonotum. C. Scutellum. D. Post-scutellum. E. Propodeum.

EXPLANATION OF PLATE I (VOL. XIX).

FIGS. 1-2.—*Ripersia donisthorpei*, n. sp. ×250.
sp. = spinneret, *spi.* = spine, *e.* = eye.
FIG. 3.—*Ripersia formicarii*, n. sp. ×250.

Gonatopus sociabilis, n.sp., and a table of the British species.

By PROF. DR. T. T. KIEFFER (translated with notes by HORACE DONISTHORPE).

♀ . Black; the first two joints of the antennæ, the head, except above, which is brown-black, the tarsi and the sloping part of the large abdominal segment, of a red-yellow colour; club of anterior femora black-brown, the extremity of the four other femora, and of the four posterior tarsi, a little obscured. Vertex depressed and slightly concave, with a slight median carina. Antennæ reaching the extremity of the thorax; scape bent, large, half as long again as the second joint; second joint twice as long as broad; third joint slender, equal to the first and second together; fourth gradually thickened; fifth to the tenth equally large, fifth hardly twice as long as broad; ninth half as long as broad. Thorax bright and smooth; first node with a transverse impression before the middle, anterior part shorter than the posterior and nearly smooth; posterior part raised and elongate, narrowing between the two nodes a little shorter than broad; second node elongate, with fairly abundant upstanding hair, having in front, and at the sides, an impression or suture well marked; the sloping part transversely striate. The thin part of the posterior femora longer than the thickened part. Anterior metatarsus equal to the fourth joint, twice as long as the second and third together; the fifth a little longer than the third. Interior joint of the pincers strongly bent before the extremity, which bears 13-15 lamelles (little plates), of which one on one side and three on the other are very long; the bent part without plates; the rest, underneath, bears a row of obtuse plates, touching each other, and

a row of bristles twice as long again ; the row of plates are wanting in the basal quarter; the exterior joint of the pincers without plates, bristles, or an apical tooth. Size, 3·5mm.

This species is near to *G. pilosus*, Thoms., but the latter has the whole thorax, according to Thomson, covered with upstanding white hair. The genus *Gonatopus* has six representatives in England, which may be grouped in the following manner:—

1. Second thoracic node with upstanding hair; vertex slightly excavate ... ... 2.
   Second thoracic node glabrous ; vertex strongly excavate 3.
2. Exterior joint of the pincers armed, underneath, with six to eight plates, thickened, and with a subapical tooth ; interior joint bent before the extremity, with plates in rows. Myrmecophilous according to Bignell (according to me, p. 91, *subpilosus*, p. 500, *substriatus*) ... *striatus*, Kieff.
   Exterior joint of the pincers unarmed, without plates, and without a subapical tooth; interior joint bent before the extremity, with one row of plates touching each other, and one row of bristles much longer. Myrmecophilous ... ... *sociabilis*, Kieff.
3. Exterior joint of the pincers unarmed; interior joint strongly bent before the extremity, with one row of plates and one row of bristles ... ... 4.
   Exterior joint of the pincers with one row of thickened plates and with one tooth before the extremity; interior joint not bent before the extremity, with two rows of plates ... ... 5.
4. Thorax entirely black; exterior joint of the pincers armed underneath, in the middle, with bristles ... *distinguendus*, Kieff. (*pedestris*, Marsh. not Dalm.)
   Thorax red and black ; exterior joint without bristles ... *marshalli*, Kieff. (*lunatus*, Marsh. not Klug.)
5. Interior joint of the pincers with two rows of very thick plates, each row containing only five plates ... *bicolor*, Hal. (*pedestris*, Marsh. pt., not Dalm.)
   Interior joint of the pincers with two rows of compact plates touching each other ... ... *distinctus*, Kieff. (*pedestris*, Marsh. pt., not Dalm.)

[The species here described was taken by me on the Camber sandhills, in August, 1902, running among a number of *Tetramorium caespitum*, to which ant it bears a strong superficial resemblance. *G. striatus*, Kieffer, was taken by Bignell in a nest of *Formica fusca*, where I know not. Mr. Chitty tells me that Mr. Morley has taken a specimen of the new species at Lymington. All the species of *Gonatopus* are very like ants; they are parasitic, I am told, on small Homoptera, but they belong to the section of species which mimic ants, and obtain protection from their resemblance to them, living in or near ants' nests in order to obtain their prey. To this section belong some of the bugs, spiders, etc.—H. St. J. K. D.]

Notes on Coleophorids—Coleophora argentula.

By H. J. TURNER, F.E.S.

On September 9th, 1904, I went down to Fobbing, on the Essex marshes, to obtain larvæ of various species of Coleophorids, which I knew abounded in the neighbouring saltings. There, I found in numbers, the cases of *C. argentula*, on the heads of matured seeds of the common yarrow (*Achillea millefolium*). The cases were never

found on the heads of flowers, but only on heads in which the seeds were fully formed. Probably the larvæ do not hatch until this occurs, although the ova may be laid among the flowers. An isolated plant rarely produced a larva, but often as many as eight cases were obtained from each of several heads in a large cluster of the plants, and scarcely one head did not produce at least two. Most of the cases were very soft, and of a dusty brown appearance, from the thick coating of pollen and anther *débris*, frass and nibblings of the seed, and seed-vessels, so that, although they are perfectly white and conspicuous at first, they very soon become protected, and are then most difficult to see. Usually the cases are deeply embedded in the umbel, and some larvæ attack the seed-vessels from below, so that it is only by close scrutiny that they are discovered, and one rises from the search with the feeling that, in all probabilty, several have escaped notice. I brought home a large bunch of heads of seed to serve as a reserve of food, and on which close search had produced no further larvæ, yet some five days subsequently, no less than twenty-five new cases were obtained on them, and later on others appeared. This would seem to point to the fact that the ova do not hatch until the seeds are fully developed, and also that the early instar, or instars, of the larva are spent in the seeds without a case. The seed-vessels are usually very close together, so that it is often found that a larva will pass from one to another, safe-guarding itself, however, by fastening the old and newly-attacked seeds together with silk.

The cases, which are extremely thin and fragile at first, gradually become harder and stiffen. In many instances, the larva makes a long silken gallery in the seeds, and this is attached to the mouth of the case and is soft and crumpled. The anal end of the case is three-valved, not pointed, but abruptly cut off, the adpressed edges of the valves show white in the older cases from the slight protrusion of the white inner lining. In general shape the case is cylindrical, gradually contracting fore and aft. At the base of the valves the constriction is slight, the adpressed sutures of the valves projecting somewhat. The neck of the case is also slightly constricted, but the edge of the mouth-opening, in cases without the attached gallery, is not turned out. The mouth-opening is turned down, so that the case lies almost prone on a flat surface, or, as Heinemann styles it, in position 1.

The larvæ are most contented, and wander but little, which is the more remarkable as those of most other members of the genus are particularly restless and vagrant. On one occasion a bunch of heads, thrown on the floor of the conservatory and left for a week or ten days, was found to contain more than two dozen larvæ. Cases enclosed on their food in glass-topped tins often remained in one position for weeks, during which time the cases became hard and stiff from the inner lining of silk, and the attachment of dust fragments on the outside. The surface of the case is rough, and these particles get attached to the irregularities and become matted. It was a most rare event for a larva to leave the food and get on the glass of the box.

The larvæ have four pairs of abdominal legs, or remnants of legs, which it is quite impossible to see, except when the larvæ are moving. They are hidden, as a rule, in cavities and can only be observed if the larva be held between the thumb and finger on its back, and can be induced to exhibit a kind of peristaltic movement of the segments,

the alternate extension of successive segments allowing the cavities to open more or less, affording a fleeting view of the circlets of hooks. The general body-colour is a dull, thick, smooth white. The head is of a light brown colour, with slightly darker jaws, the cheeks with the darkest spot. The intersegmental space between the head and the 1st thoracic segment is conspicuously lighter that the general body-colour, enhanced no doubt by the darker head and prothoracic plate. There is a large light brown plate on the 1st thoracic segment with a suture in the middle, tapering at the front and wider behind. This plate is of a somewhat lighter brown than the head, and the colour thins out gradually and irregularly to the margins of the plate, especially at the outer corners of the back part of the plate. The 2nd thoracic segment has four small plates, arranged in the segment of a circle, with the concavity forward. The interspaces are equal and of a fair width, and the colour of the plates still somewhat lighter than that of the plate on the preceding segment. The sutures are directed obliquely outwards and backwards. The 3rd thoracic segment has the markings of the 2nd exactly reproduced, but they are very faint in colour, indeed, only a shade or two darker than the general ground colour. The spiracular spots are about equal in size and of a faint colour. The anal plate is brown and darker at the margins. The tips of the thoracic legs are brown, and between them, on the body of the larva and the basal portions of the legs, are a few scattered brown markings of irregular shape.

Very rarely have I met with cases on the white flowers, but, on October 2nd, 1904, on the railway-bank at Hayes, I found, on some very late flower-heads, about a dozen and a half of larvæ, the cases of which were all soft and clean, with the anal ends weakly constructed and indefinite in shape. The suggestion arises that these may have been the offspring of a summer or early brood, at any rate, it was extremely late to find the larvæ in that early stage. I have frequently searched, but in vain, in order to find the larvæ before they commence their cases. A few larvæ were found still feeding, on October 23rd, at Sevenoaks. A larva was, on one occasion, taken from its case to confirm a previous examination, and when not required was placed on a seed-head without its case. It soon started to burrow in the seed-vessel, and in twenty-four hours had not only hidden itself, but had successfully manufactured a flimsy new silken covering.

In November, the larvæ were all placed out-of-doors, in flower-pots covered with muslin, and, when examined in early spring, had not moved. Every few weeks afterwards they were looked at, and later on more frequently, but none moved. Of a few kept all the winter in a glass-topped tin box, only one moved, in May, and settled on the glass. On June 8th, 1905, some of the cases of the larvæ kept out-of-doors were opened, and the larvæ were found to be still unchanged, but not shrivelled, although very white. The usual position for the hybernating larvæ is on the small stems of the yarrow-heads just below the florets, very seldom was a case noted on the sides of any of my pots. The imagines began to emerge in numbers quite at the end of July, and continued to do so daily during the first two weeks of August. Unfortunately, this was exactly coincident with my holidays, and only a few were retained.

In 1905, this species was again extremely abundant at Fobbing, on

the land sides of the seawalls, in mid-September, and, on October 18th of the same year, the larvæ were found in large numbers at Chipstead, frequently as many as seven larvæ being noted on a single head of seeds. Of these I bred a considerable number this year; no doubt the early summer caused the emergences to begin nearly a month earlier than in 1905, *viz.*, in the first week of July.

Coleoptera in the New Forest.

By WILLIAM WEST.

I collected in the New Forest during the last week in May and the first in June, 1906, in the company of Mr. Ashby. The whitethorn being in bloom during that period, we expected to find many of our common coleoptera abundant, but the reverse was our experience, such things as the species of *Telephorus* and *Anaspis* came in ones and twos, and the only coleopteron we can say was abundant was *Melolontha vulgaris*, and that species tumbled into the umbrella with every stroke of the beating-stick. The nights during our stay were very cold, which I should suppose was the cause of the small number of each species taken. The following were our chief captures:—*Calosoma inquisitor*, taken by beating oaks, in the Queen's Bower; *Pterostichus striola*, *P. niger*, *P. vulgaris*, *P. madidus*, *Anchomenus angusticollis*, *A. oblongus*, *A. parumpunctatus* and *A. virens*, at Holmsley, under stones and tufts; *Loricera pilicornis*, *Acupalpus dorsalis*, and several species of *Bembidia*, by sweeping near the stream, at Holmsley; *Haliplus flavicollis*, *Deronectes depressus*, several common *Hydroporı*, *Agabus unguicularis*, *Platambus maculatus*, *Ilybius fenestratus*, *Rhantus pulverosus*, *Dytiscus punctulatus*, *Berosus affinis*, *Limnebius truncatellus*, *L. papposus*, *Helophorus*, two species, *Ochthebius pygmaeus*, *Hydraena riparia*, and *Cyclonotum orbiculare* were taken with the water-net at Holmsley. A number of species of the *Staphylinidae*, the best being *Megacronus cingulatus*, *Mycetoporus splendens*, *M. angularis*, *M. splendidus*, *Staphylinus latebricola*, *S. caesareus*, *Philonthus splendens*, *P. ebeninus* var. *corruscus*, *Paederus littoralis*, *P. fuscipes* and *P. caligatus*, all taken by sweeping in different parts of the Forest; *Necrophorus mortuorum* and *Silpha laevigata* from a dead bird; *Cholera grandicollis* and *Bryaxis juncorum*, sweeping; *Cerylon histeroides*, *C. fagi*, and *C. ferrugineum*, under bark; *Epuraea parvula*, from fungus; *Amosita depressa*, *Pria dulcamara*, and several of the common *Meligethes*, at whitethorn-bloom; *Ips* 4-*pustulatus*, under holly bark; *Rhizophagus ferrugineus* and *R. bipustulatus*, *Laemophloeus duplicatus*, *Silvanus unidentatus*, and *Thymalus limbatus*, under bark; *Scaphidium* 4-*maculatum*, under faggots; *Cetonia aurata*, at whitethorn-bloom; *Trachys troglodytes*, sweeping; *Elater lythropterus* and *E. sanguinolentus*, two of each were taken at whitethorn-bloom, also one *Corymbites tessellatus*, one *C. metallicus*, and four *Sericosomus brunneus*. *Melanotus rufipes* was flying commonly in the sunshine; *Helodes marginata* and *Cyphon padi*, by sweeping banks of streams. Several species of *Telephorus*, but none common, except *Rhagonycha testacea*, which occurred, and was taken by sweeping, on the banks of streams; *Tillus elongatus*, one on a beech-trunk; *Thanasimus formicarius*, at roots of pine stumps. Of the Longicornes—*Asemum striatum* was captured by searching pine-stems; *Callidium violaceum* was taken in numbers at our lodgings,

from a corrugated iron shed that was supported by larch beams, fifty were taken one morning before breakfast; *Anoptodera* 6-*guttata* and *Grammoptera praeusta*, at whitethorn bloom; the genera *Clytus*, *Rhagium*, *Toxotus*, *Leptura*, and *Strangalia*, too, were all represented. Of the *Chrysomelidae* the following species were taken; *Donacia thalassina*, *D. vulgaris*, *D. sericea*, and *D. discolor*, by sweeping water-plants, at Holmsley. *Chrysomela didymata*, *Phaedon tumidulus*, *P. cochleariae*, *Hydrothassa marginella*, *Luperus rufipes* and *L. flavipes*, also by sweeping at Holmsley; *Phytodecta viminalis*, common on sallows; *Phyllobrotica* 4-*maculata*, on alders; *Longitarsus holsaticus* and *L. ochroleucus*, *Phyllotreta nigripes*, *P. tetrastigma*, *P. exclamationis*, *Chaetocnema aridula*, *C. confusa* and *C. hortensis*, also *Casida equestris*, by sweeping in the New Copse; *Ischnomera coerulea*, at whitethorn; *Mordelestina humeralis*, by sweeping; four species only of *Anaspis*, at whitethorn; *Rhynchites aequatus* and *R. aeneovirens*, at whitethorn; *Polydrusus flavipes*, one by beating oaks; *P. confluens*, on furze bushes; *Phyllobius calcaratus*, on alders; most of the other species by beating; *Sitones cambricus*, *Hypera rumicis*, *H. polygoni*, *H. variabilis* and *H. plantaginis*, by sweeping; *Curculio abietis*, on pine stumps; *Orchestes quercus*, *O. ilicis*, *O. avellanae*, *O. rusci* and *O. salicis*, by beating, and many other common species. I have not compiled this list to show the great number of rarities taken by us, but to show beginners what is to be done by them if they should pay a visit at the time stated in the New Forest.

Notes towards a Life-history of Polyommatus donzelii.

By J. McDUNNOUGH.

(*Concluded from* vol. xviii., p. 316.)

LARVA.—*Second instar:* The larva, immediately after skin-shedding, is about 2·5mm. long, but grows rapidly, attaining to a size of 4mm. in about a week. In shape it is typically Lycænid; the front portion of the prothorax is thick and fleshy, capable of forming a protection for the head when withdrawn. The whole segment slopes rapidly upward, and the following segments, as far as the 6th abdominal, form a flat dorsal plane with sloping sides; the remaining segments are flattened, and incline fairly rapidly to the hinder portion of the flange. This flange is not continuous, but swells out at each segment, causing the lateral line, as seen from above, to appear wavy. The marginal flange is still entirely abdominal, but similar in shape to the subspiracular. The dorsal ridges are well-marked, being slightly higher posteriorly. On a casual glance the larva appears much darker than in the previous stage, but this is largely due to the presence of dorsal and lateral lines, which hide great portions of the ground colour. This, indeed, is slightly lighter than before, being almost white, but is only to be seen on the dorsal ridges, certain portions of the sides, and the extreme outer portion of the flange, as well as on the underside of the body. A brownish-red dorsal line, commencing on the mesothorax, is very prominent. This is very slightly broken by the incisions of the segments, and is not so marked on the final abdominal segments, although still recognisable. Between this and the flange, each segment is practically divided into three equal portions by two reddish stripes, neither of which is continuous, being broken by the segmental incisions, the

upper one slightly more so than the lower. The former is practically parallel with the dorsal line, but the latter has a slight ventral slope from the anterior margin backwards, so that, on each segment, the commencement of the stripe is slightly more dorsal than the conclusion of that of the preceding segment. The flange is also reddish, with the exception of the outermost portion, and, in later stages of this instar, the colour extends ventrally as far as the marginal flange, and dorsally to a level with the spiracles. The prothorax and the final abdominal segments, owing to the converging of the various bands of colour, appear much more suffused with red, and only show here and there traces of ground colour. This stage is noticeable for the great increase in the number of secondary tubercles, the whole area of the body being more or less thickly covered with them. The tubercles of the previous instar can still be traced by their larger size. These, as well as many of the smaller ones, possess two or three spicules, arranged in a ring about midway between the base and apex. The lenticles also have a circle of usually five similar spicules around the black ring, giving them a star-shaped appearance. On each dorsal ridge is a group of three tubercles, arranged in the form of an arc, with the convex side outward. As the central tubercles approach each other closely, the whole six tubercles present the appearance of a semicircle across the dorsal area of the body. Within this is enclosed a group of three or four smaller tubercles, while, on the anterior margin, are usually two minute tubercles. This arrangement is slightly modified on the 2nd and 3rd thoracic segments by the addition of a large tubercle anterior to the three already mentioned, especially noticeable on the mesothorax, and further by the number of tubercles contained within the semicircle being increased to six, these forming, in their turn, a horseshoe curve, the open end of which points forward. Of the lateral lenticles, so prominent in the first instar, the smaller has disappeared entirely, but the other, much reduced in size, remains, except on the mesothorax, where it is entirely absent. Between this lenticle and a large tubercle occupying a position similar to tubercle iii of the previous instar, are scattered five or six minute tubercles with correspondingly small setæ. One of the most characteristic features of this instar is a group of three lenticles, occurring between tubercle iii and the spiracle, and at first easily to be confused with this. One is anterior and ventral to the tubercle, the other two posterior, and placed vertically above each other. On the final abdominal segments the position of these seems to vary greatly, and is not even constant for the same segment on different larvæ; the number, also, is often reduced. On the 3rd thoracic segment the position is reversed, two being anterior and one posterior, the more dorsal of the anterior lenticles being slightly above the tubercle. On the mesothorax only two very minute lenticles can be found. Several small tubercles also occupy the supraspiracular area. On the flange is situated a group of six or seven tubercles, of which three, occupying practically similar positions to those of the first instar, are considerably larger. This number is increased on the thoracic segments. The space between the flanges, as well as the marginal flange itself, is also occupied by several small tubercles, with occasional lenticles. On the prothorax the anterior margin is bordered by a double row of tubercles. The remaining space is occupied by tubercles, which may be divided into three groups, converging from points on

the posterior margin to a spot midway between the thoracic plate and the head. The lowest group starts immediately below the spiracle, and consists of seven large and several small tubercles. Another group of six very small tubercles is parallel to the anterior margin of the thoracic plate, and between these two groups we find the third group consisting of about six larger tubercles. Each of these groups is thus arranged, fairly regularly, in the form of an arc. The spiracle is large and rather flat compared with those of the abdominal segments. The thoracic plate is small, and contains eight tubercles, situated around the margin, and two lenticles towards the centre. The rear abdominal segments are considerably modified. On the 7th and 8th, the spiracles are more dorsal than on the preceding segments, and slightly larger. Dorsally, the 7th abdominal contains only two tubercles, situated on a slight elevation arising out of a depression; the whole is bordered by a circle of small tubercles, together with several lenticles, giving an impression very similar to that produced by an anal plate. On the 8th abdominal but one pair of dorsal tubercles is represented, and the dorsal area of the 9th is occupied by two tubercles placed one behind the other. The lateral areas of all these segments contain several tubercles and lenticles irregularly placed. On the 8th abdominal, posterior and ventral to the spiracle, is a slightly raised, round, whitish patch, presumably the commencement of a gland. The prolegs appear to bear two anterior and two posterior booklets, separated into two groups by a pad. Duration of instar = thirteen days.

Third instar.—Length, when fairly advanced in this stage 5mm., increasing later to 7mm. Shape, Lycænid. The ground colour is light olive-green, with reddish-brown dorsal stripe and subspiracular flange, the outer margin of which is an almost pure white. The lateral area is occupied by three stripes of a slightly lighter colour than the dorsal stripe. Stripes 1 and 2 are practically similar to those of the previous instar, stripe 1 being parallel to the dorsal line, and stripe 2 inclining somewhat from front to rear. Stripe 3 is parallel to the second stripe, the angle being such that it seems to be the continuation of stripe 2 of the previous segment. The colour of the lateral flange extends upwards to meet this last stripe at both margins of the segment, leaving only a white patch around the spiracle free. On the 7th abdominal segment, the dorsal stripe is widened out to a diamond-shaped patch, reproduced in miniature on the remaining posterior segments. On these rear segments the lateral stripes are not so well marked, tending to suffuse. The prothorax shows traces of lateral markings, but, in general, displays more ground colour than any of the other segments. The subspiracular flange does not appear quite so prominent at this stage, owing to the filling out of the lateral portions. Viewed from the side, the marginal flange is now distinctly visible, presenting a series of well-rounded curves. The prothorax is broad, rounded, and overhanging, sloping upwards from front to rear, from which latter margin the mesothorax rises almost perpendicularly to the dorsal plane. The rear segments are very flat and sloping, showing no traces of dorsal ridges, and terminating in the continuation of the spiracular flange, which forms a species of rim around the hinder margin of the 9th abdominal segment. The spiracles are much larger and well distinguishable from any lenticles, being situated on a slightly raised white patch. The general surface of the

body is still more thickly covered with small seta-bearing tubercles, intermixed with minute lenticles which are very irregularly placed. The larger tubercles show scarcely any trace of the black apical ring, which, however, can still be observed on the smaller ones. On the other hand, they exhibit a double circle of spicules, one close to the apex, the second midway to the base. The smaller tubercles are usually only slightly spiculate at the base. The dorsal ridges are occupied by six large tubercles, of which two are situated close to the dorsal stripe, the remaining four forming a species of four-sided figure somewhat lateral to the first two; interspersed among these are numerous smaller tubercles in no special order. Between these and the supraspiracular tubercles, the surface of the body is fairly thickly covered with numerous small tubercles with very short setæ. The large lenticle of the previous stages has been replaced by two very small ones, situated rather more to the rear than was the case previously. In the supraspiracular area, on the white field occurring below the second reddish stripe, are two large anterior tubercles, and two smaller posterior ones, while the lenticles of the previous instar have increased in number, although diminishing in size, two or three occurring on the anterior margin, while, posterior to the spiracle, is a group of three or four quite close together. The customary small tubercles occupy the intervening space. The arrangement on the flange shows practically no alteration from that of the previous stage. The dorsal portion of the 7th abdominal segment strikes the eye at once, owing to the absence of any of the ordinary tubercles, and to the large increase in the number of small tubercles and lenticles situated on the rear margin of the circular depression already mentioned in the second instar. These, for the most part lenticles, form a semi-circle across the posterior portion of the segment, the anterior portion of the depression being fringed with small tubercles, more widely removed from each other. On the 8th abdominal segment, the gland which had already begun to develop in the previous instar, is now very marked, and capable of being protruded like the finger of a glove, forming a white bell-shaped structure, the upper margin of which is irregular, slightly hollow, and with seemingly a central slit. While under observation, this gland was in constant activity, swelling out and then collapsing together again until only a faint white spot remained to mark its location. No trace of any liquid exuding could be seen. The prothoracic plate is small, and situated in a deep depression, which appears to be formed by the continuation of the spiracular flange around the anterior portion of the segment. The plate itself contains about 20 small tubercles and lenticles, the two tubercles at the rear being larger and provided with longer hairs.

Fourth instar.—Length, when at rest, 7mm. Breadth, 2·5mm. Shape, quite Lycænid, with very flat posterior segments and broad overhanging prothorax. The general appearance and markings are very similar to those of the previous instar. The ground colour is a very dull olive, the dorsal and lateral stripes have faded to a deep olive, the former being slightly the darker, and the spiracular flange is still reddish, with whitish outer margin. The position of the lateral stripes is as before, only the first stripe shows a tendency to spread downward on the posterior margin, while the third is much clearer, the colour not suffusing with that of the flange. The segmental

incisions are deeply cut, especially in the dorsal region. The dorsal depression between the ridges is not nearly so marked, and the general impression of this portion of the segment is that of a plane gently inclined towards the posterior margin. The spiracular flange shows a tendency to expand in slight ridges for a short distance upwards along both margains of the segments, leaving a central depression, in which the spiracle is situated. As regards the tubercles, the remarks on the previous instar apply to this stage also. There is only a slight increase of smaller tubercles, and the larger ones are practically the same in number and position. The tubercles on the flange bear long setæ, those on the outer margin being the longest (1mm.), forming thus a fringe around the body. On the 7th abdominal segment, the semi-circular group of tubercles and lenticles has still further increased, the tubercles being almost entirely replaced by lenticles, which number about 30, and are very close together. The centre of the depression is now occupied by a transverse slit, presumably a gland, although I was unable to discover any exudation. The prolegs possess six hooklets in the anterior groups, and four in the posterior one. These are arranged so that half the number of hooklets project beyond the others, forming, as it were, a double row.

Fifth instar: Length, 9mm., height, 2mm., breadth, 3mm. Owing to the great increase of small hair-bearing tubercles, the larva has a general silky-white appearance, which tends to hide to a large extent the ground colour and markings. The long hair-bearing tubercles are confined to the dorsal bosses, the supraspiracular area and the spiracular flange, on which latter they are especially numerous. On the rear segments, however, with the exception of the flange, these long hairs are absent. The tubercles have now lost all trace of the black apical ring, but are otherwise identical with those of the previous instar, being white cones with spiculated bases, bearing white spiculate hairs. The remaining surface of the body is thickly covered with minute white tubercles, each of which usually carries a small, somewhat atrophied, hair, which is occasionally lacking; the tubercle has, then, much the appearance of a miniature star-fish, with its circlet of five or six minute spiracles near the apex. The former black lenticles here become very minute, are now of a brownish tinge, and are confined, with the exception of a few irregularly scattered here and there, to the prothorax, the dorsal portion of the 7th abdominal segment, and to the neighbourhood of the spiracles. The spiracles consist of dark brown chitinous rings, with white centres, situated on small white mounds arising out of depressions which, in freshly moulted larvæ, appear to occupy the whole breadth of the segment. In full grown specimens, however, the spiracular hollow can be clearly seen to be separated by a ridge from a deeper depression, extending up the posterior portion of the segment from the flange to the second lateral stripe. This depression is deepest at the flange, and, with its rounded margins, gives somewhat the impression of a horseshoe. The spiracles of the 7th and 8th abdominal segments are, as usual, very prominent and larger, and the glands of the 8th abdominal are now clearly visible to the naked eye as white spots, situated just posterior to the spiracle. The thoracic plate is in a very deep depression, so that, when the larva is at rest, it is almost hidden by the overlapping mesothoracic segment. The plate itself is white, the anterior margin well rounded, the sides concave, and meet-

ing at a point on the posterior portion of the segment. Each of the three angles of the plate is occupied by a black patch of pigment, seemingly at the bottom of a slight depression. The remainder is thickly covered with large seta-bearing tubercles of a dull brown colour, and not of the characteristic white exhibited by the other tubercles.

General description: A general description of the larva, made when nearly fullgrown, may be appended here, although repeating in some measure what has already been said. Length, 11mm. Colour, pale olive-green, thickly covered with white hairs, giving a silky appearance, and hiding markings. The dorsal stripe is of a deep green and much darker than the three lateral stripes, which, in their turn, are darker than the ground colour. These lateral stripes consist of one immediately below the bosses, the dorsal side of which is parallel to the dorsal stripe, while the ventral side, owing to a broadening out of the posterior margin, slopes slightly downwards from front to rear. Parallel to this lower margin two lateral stripes occur at equal intervals between this and the spiracle, so inclined that the lower stripe appears as the continuation of the upper one of the preceding segment. The spiracular flange is of a dull purplish-red, with a white band extending along the extreme outer margin. This red colour, in early stages of the instar, extends above the flange proper for a short distance, but, in fullgrown larvæ, is confined to the flange itself, the other portions toning down into the olive-green of the lateral stripes. The final segments are slightly suffused with reddish, and not so clear a green as is the case with the anterior segments. The shape of the larva, its broad flat prothorax, its overhanging mesothorax, dorsal bosses, and sloping rear segments, is so typically Lycænid that a more detailed description may be omitted here. When fullgrown the larva attaches itself by a thread around the abdomen to the base of a stalk, and changes in about three days to a pupa of the usual Lycænid form, which produces the imago in fifteen days.

Pupa.—In shape Lycænid, with no trace of anal spike, and with pupal skin attached. Length, 9·5mm. General colour, pale olive, with very transparent wing-cases. The abdominal segments possess a dorsal stripe of a darker green, and, below the spiracles, traces of a reddish stripe, similar in colour to that of the flange in the larva, may be found. Owing to the transparency of the wing-cases this stripe may be traced underneath the same for some distance. The thoracic segments are generally of a rather brighter green colour than the remaining surface. The whole pupa is covered with a fine network of reddish veining, especially clear on the wing-cases, and further, with the exception of the wing-cases, the surface is occupied by numerous small white hairs and lenticles, which latter are more abundant in the spiracular area than elsewhere. The spiracles themselves are white, and situated in slight depressions. Viewed laterally, the pupa appears well rounded at both ends. The mesothorax projects considerably, and between the thoracic and abdominal segments the pupa is contracted to a sort of waist, which is marked on the ventral side by a slight hollow in the otherwise straight line of the wing-cases. Seen ventrally, the pupa presents the appearance of gradually broadening out towards the posterior end. In the thoracic region the width is about 3mm., and from here to the 4th abdominal segment there is a gradual lateral extension, until a breadth of 4mm. is reached. The sides then round

off towards the posterior end. Viewed dorsally, the frontal head-piece is scarcely visible, and only traces of the wing-cases can be seen, the hindwings alone showing base of attachment. The mesothorax extends backwards, in the shape of a wedge, into the metathorax, causing this latter to appear much broader laterally than dorsally. The hindwings, attached to the lateral angle of this segment, extend as far as the 2nd abdominal segment. The antennæ curving backward are 2mm. apart immediately below the glazed eye; from this point they gradually converge, until, at 6mm. from the anterior end, they meet and run parallel for a length of 1·7mm. to the rear of the 4th abdominal segment, ending apparently flush with the wing-cases; on careful examination, however, they may be seen to be continued under the surface of the 5th abdominal segment for a short distance. The maxillæ are about 3·2mm. in length, ending at the junction of the antennæ. On both the antennæ and maxillæ the sculpturing is very plain, and consists, in the main, of transverse veins with small side branches; an actual network is less apparent than on the other portions of the pupa. The legs are rather indistinct owing to their veining being less marked than on the antennæ and maxillæ. The first pair abut against the eye and the antennæ—the former surface being much the broader—and join the maxillæ at about half their length. The remaining space is occupied by the second pair of legs.

In conclusion, I may state that the average length of each instar was twelve to fifteen days, and that emergence took place early in June. This is naturally a period far in advance of the actual appearance of the imago in its habitat, so that in all probability the growth and development is much slower in nature than in confinement.

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from vol.* xviii., p. 329).

Genus II: Amphiestris, Fieber.

Distinguished from *Locusta* by the characters given in the table; it is not likely to be confused with that genus. It contains a single species.

1. Amphiestris bætica, Rambur.

Green, varied with yellowish, and darker; pronotum spotted with yellow; elytra green, with blackish network. Length of body, 31mm. ♂, 32mm. ♀; of pronotum, 7·8mm. ♂, 9mm. ♀; of elytra, 10mm. ♂, 5mm. ♀; of ovipositor, 23mm. ♀.

Occurs on shrubs in the south of Spain, at Malaga and in Andalusia. Also in Algeria.

Family V: Decticidæ.

This is an important and extensive family, including a large number of active and powerful grasshoppers in the temperate regions of the Old and New Worlds. Southern Europe appears to be the headquarters of the group, but a few isolated genera occur in South Africa and Australia.

All the genera have a well-marked family likeness; they are active and powerful insects, with especially well-developed hindlegs; the head is more or less rounded, and the frons slightly enclined; in the

majority of genera the wings are rudimentary, and the elytra present only as stridulating organs in the male, and mere side flaps in the female; the ovipositor is usually long and sword-shaped, either straight or gently curved. But the most characteristic feature is the presence of a pair of free lobes, called plantulæ, on the underside of the first segment of the posterior tarsi.

TABLE OF GENERA.

1. Prosternum with two spines (except in the single species, *Anonconotus apenninigenus*).
2. Hinder tibiæ with four terminal spines beneath, of which the two outer ones are the longer.
3. Plantulæ short and inferior, much shorter than first tarsal segment (all femora unspined beneath; pronotum rugose, with central keel) .. .. 1. ANONCONOTUS, Cam.

3.3. Plantulæ longer, nearly as long as first tarsal segment, lateral.

4. Elytra and wings perfectly developed or abbreviated; cerci of ♂ conical, pointed; ovipositor curved downwards, the apex obliquely truncate .. .. 2. GAMPSOCLEIS, Fischer.

4.4. Elytra rudimentary; ovipositor curved upwards, pointed .. .. 3. PTEROLEPIS, Ramb.

2.2. Hinder tibiæ with two terminal spines. (Elytra always squamiform, wings abortive.)

3. Plantulæ as long as, or longer than, first tarsal segment.

4. Cerci ♂ conical .. .. 4. SCIRTOBÆNUS, Pant.

4.4. Cerci ♂ conical but toothed on inner side at base .. .. 5. RHACOCLEIS, Fieb.

3.3. Plantulæ much shorter than first tarsal segment (cerci ♂ laminate).

4. Pronotum strongly produced backwards, almost entirely covering elytra in both sexes.. .. .. 6. THYREONOTUS, Serv.

4.4. Pronotum truncated posteriorly, elytra almost entirely free .. .. .. 7. ANTAXIUS, Brunner.

1.1. Prosternum unarmed (posterior tibiæ with four terminal spines, except in *Ctenodecticus pupulus*, Bol., and in the genus *Asterastes*, Br.).

2. Anterior tibiæ with three spines above.

3. Elytra and wings squamiform; pronotum convex above or plane, with central keel absent or almost obsolete.

4. Plantulæ surpassing first two tarsal segments.. .. .. 8. CTENODECTICUS, Bol.

4.4. Plantulæ not surpassing first tarsal segment.

5. Posterior tibiæ with two terminal spines (all femora unarmed beneath; ovipositor curved) .. .. 9. ANTERASTES, Brunner.

5.5. Posterior tibiæ with four terminal spines beneath.

6. Ovipositor straight, obliquely truncate at apex.. .. .. 10. PACHYTRACHELUS, Fieb.

6.6. Ovipositor more or less curved upwards, pointed .. .. .. 11. OLYNTHOSCELIS, F. de W.

3.3. Elytra and wings perfectly developed, or abbreviated; pronotum plane above with median carina in the posterior portion.. 12. PLATYCLEIS, Fieb.

2.2. Anterior tibiæ with four spines above. (Pronotum plane, with distinct median carina.) Elytra and wings perfectly developed .. 13. DECTICUS, Serv.

Genus I: Anonconotus, Camerano.

(= Genus *Analota*, Brunner).

Distinguished by the squamiform elytra in both sexes, flat surface of pronotum, which is rugose, by the femora being unarmed beneath, and by the gently upcurved ovipositor of the female.

There are two species known.

Table of Species.

1. Prosternum with two obtuse spines; anterior tibiæ with three spinulæ above .. .. 1. alpinus, Yersin.
1.1. Prosternum unarmed; anterior tibiæ with one or two spinules above .. .. 2. apenninigenus, Targ.

1. Anonconotus alpinus, Yersin.

Olive-green, varied with reddish; pronotum green above, the side flaps and pleuræ chestnut; elytra yellow. Length of body, 16mm.-18mm. ♂, 20mm.-22mm. ♀; of pronotum, 6·5mm. ♂, 7mm. ♀; of elytra, 2mm, ♂, 1mm. ♀; of ovipositor, 11mm.-15mm. ♀.

Occurs in a few mountains in France where the rhododendron grows; recorded from Larche, in the Basses-Alpes; common at Chanrousse, Isère, Col du Lauteret, Montagne de Cretz, Drôme, and in the Jura, from the rhododendron zone to the crest. In Switzerland, it was discovered by Yersin, at Morclès, in the Canton de Vaud; it is also fairly common in the Jura round Geneva. In the Basses-Alpes it is found at over 7000ft. elevation.

2. Anonconotus apenninigenus, Targioni.

Ferruginous, varied with fuscous; pronotum pale, testaceous above, the side flaps with black bands and the lower margin lemon-yellow; the male appears to be unknown. Length of body, 22mm. ♀; of pronotum, 5·5mm. ♀; of posterior femora, 13mm. ♀; of ovipositor, 15mm. ♀.

Discovered by Targioni-Tozzetti, near Florence. In France, it has been taken in the Col de Valjelages at about 7000ft., in the Basses-Alpes, and also on the plateau of Gondran, near Briançon, but it is very rare in France.

Genus II: Gampsocleis, Fischer.

This genus extends through northern Asia as far east as Japan, but in western Europe we have only one species; by its spotted elytra and decurved ovipositor, with the apex obliquely truncate, it is easy to recognise.

1. Gampsocleis glabra, Herbst.

Bright green or, rarely, brown; elytra and wings long and well-developed, the former spotted with black. Length of body, 22mm.-26mm. ♂, 20mm.-24mm. ♀; of pronotum, 5·6mm.-7mm. ♂, 5·2mm.-7mm. ♀; of elytra, 20mm.-26mm. ♂, 19mm.-28mm. ♀; of ovipositor, 15mm.-21mm. ♀.

This handsome insect is easy to recognise by its slender build and coloration, and especially by the decurved and obliquely truncated ovipositor; it is widely, but very locally, distributed through western Europe, occurring in long grass. In Germany, it is recorded from the Luneberger Haide, Berlin, Thuringen, and Frankfort. In France it is rare, but has been taken near Gerbomont, in the Vosges, Don-sur-Auron, Montreuil-Bellay, Turtandière, Cogolin, Montoir-de-Bretagne.

In Belgium it is very rare, but has been taken at Lanklaer, in Campine and the Limburg. In Austria, it occurs at Oberweiden, and used formerly to be found at Felixdorf, also at Liesing; further east, in Hungary and Servia, it is fairly common. In Spain, it is recorded from the mountains of Aragon and of Cuenca, at Benabarre and Serrania de Cuenca; according to Bolivar it is found among long grass, the green forms near rivers, and the rarer brown form in cultivated fields. The Spanish specimens are bigger and brighter than those from eastern Europe, and have received from Bolivar the varietal name *assoi*.

It has so erratic and wide a distribution that we may hope to discover it in Great Britain, and it would make a very handsome and notable addition to our list.

(*To be continued.*)

VARIATION.

Dark aberrations of Abraxas sylvata.—I took several *Abraxas sylvata* (*ulmata*) in Bucks, at the end of June, this year, of the leaden-coloured aberration. This, Mr. Prout says, is quite new for the south of England, the form, so far, being confined principally to Yorkshire. As a matter of fact, I took specimens varying from almost pure white to this bluish-leaden form; some of the aberrations were of a brownish tinge; typical specimens simply occur in hundreds in the locality.—C. P. Pickett, F.E.S., 99, Dawlish Road, Leyton, Essex. *October 6th*, 1906. [It would be well if our contributor, or someone else interested in the variation of our British Geometrids, could compare the Buckinghamshire examples with those described at length from Yorkshire, and named (*Ent. Rec.*, ix., pp. 305-7). It is clear that Mr. Pickett has the abs. *suffusa* and *obscura*, possibly he also has the other named forms.—Ed.].

Description of an aberration of Fidonia conspicuata.—During the past twenty years I have captured and bred a good many examples of this interesting species, but, with the exception of two specimens of the second brood, bred in July, 1899, I have not noticed much in the way of variation among them, the usual departure from the normal type consisting in the abundance, or otherwise, and distribution, of the black dusting on the orange-yellow wings, but this has never been of sufficient importance to entitle the individual to a varietal name—however, the two specimens alluded to above are certainly worthy of that distinction, and may be described as *F. conspicuata* ab. *fumata*, n. ab. In this variety the orange-yellow is replaced by smoky umber-brown tinged with orange, and dusted with black atoms, as on the hindwings and portions of forewings of typical specimens. It is a peculiar and striking-looking aberration, and must be very rare, as these are the only two I have seen among the several hundreds that have passed through my hands. I am sorry to say that I am afraid this species has become extinct in the two or three restricted localities where it used to occur in Suffolk. I have not seen it, in a wild state, since June, 1901, and, although I looked for it in 1902, 1903, and 1904, I did not meet with it, either in the larval or perfect state, and in the latter year found most of the broom destroyed, and a good deal of the ground broken up, and have not been there since. The only chance of its survival in either of these localities remains in the habit of the

species to lie over for several years in the pupal state. I have had moths emerge from pupæ I have kept for four years.—Paymaster-in-Chief G. F. Mathew, R.N., F.L.S., etc., Dovercourt, Essex. *October 29th*, 1906.

Aberration of Polia flavicincta parallel in appearance with P. xanthomista.—I obtained *Polia xanthomista*, as well as *P. flavicincta*, when in Cornwall. The former emerged during the middle of August, a specimen of the latter (the only emergence) on September 14th. This example is, on the upperside, exactly like *P. xanthomista*, and not to be distinguished therefrom. On the underside, however, it does not agree with *P. xanthomista*, but the underside fixes it absolutely as *P. flavicincta*, the undersides of the two species being very different.—R. Freer, M.D., Rugeley, Staffs. *November 26th*, 1906.

Melanic lepidoptera in Cornwall. Aberration of Melitæa aurinia.—Melanism seems to be on the increase in Cornwall, as a black *Acidalia subsericeata* and most curiously dark aberration of *Luperina luteago*, much darker than the var. *barrettii*, were also taken there by a collector named Oliver. I may add that I obtained a nice aberration of *Melitaea aurinia*, in which the neuration of the wing also seemed to be varied, although the butterfly was not crippled, in any way.—Ibid.

Entephria caesiata, Schiff., ab. prospicuata, mihi, n. nom., = gelata, Stgr., nec Guen.—In the course of a paper which I read before the City of London Entomological and Natural History Society, on December 18th, 1906, but which—coming at the very beginning of the Society's new year—cannot be published for more than a twelvemonth, I took occasion to point out that Staudinger (*Catalog*, ed. 2, p. 187, ed. 3, p. 299) has misapplied the name *gelata*, Guen., which was erected (*Ur. et Phal.*, ii., p. 271) for a normal dark Iceland form, a mere subvariety of "ab." (var.) *glaciata*, Germ. He (Staudinger) has restricted that name to "*gelata* var. A" of Guenée, the beautiful whitish aberration, with only the basal patch and central fascia darkened, which appears very rarely among the more ordinary Iceland types. For this rare aberration I proposed the name ab. *prospicuata*, and take an early opportunity of giving the name publicity. The diagnosis of course will run: ab. *prospicuata*, n. nom. (citations as in *Stgr. Cat.*, ed. 3, no. 3385*c*). Alis anticis albis, basi fasciaque nigricantibus.—Louis B. Prout. *December 20th*, 1906.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Query as to the foodplant and larval habits of the first brood of Eupithecia virgaureata.—Can any of your readers tell me on what the larvæ of the first brood of this insect feeds, and the date to search for it? The larvæ of the second brood I have beaten from golden-rod in October, but, of course, this plant is not in blossom when the first brood larvæ are feeding.—Percy C. Reid, Feering Bury, Kelvedon. *October 30th*, 1906.

On the egglaying of Dryas paphia.—On reading Mr. Merrifield's note (*anteà*, vol. xviii., p. 264) on the above, it occurred to me that my own experience in the New Forest last autumn (1906) might not be uninteresting. I frequently observed females of *D. paphia* apparently ovipositing on the trunks of fir-trees at heights varying from one to seven or eight

feet above the ground. The first eight or ten times I carefully observed the spot on which the insect was, and when she left I searched it for ova, but was on every occasion disappointed. I did not think of looking under the bark, so I conclude from Mr. Merrifield's note that this was the cause of my want of success. I may mention that, during the whole time I was in the Forest (August), sugaring, larva-beating, and in fact every method of collecting, was a dismal failure.—G. D. Millward, Downing College, Cambridge. *November 1st*, 1906.

Egglaying of Hipparchia semele.—I do not know whether you have any observations as to the oviposition of *Hipparchia semele*, but I was much interested in watching the operation this summer in Devonshire, around Salcombe. My attention was attracted to a female for some reason or other, so I tracked her down several times, and, in each case, the following habit was carried out. She settled restlessly, and then felt up a green blade of grass with the tip of her abdomen, at least, my naked eye could see no more than that, the green blade did not suit her and she came to a last year's broken stem, up which she again felt with her abdomen, and then on the very top of the stem she placed her egg, this process happened each time I tracked a female down. I never noticed her hit on a dried stem the first time, and only once did she succeed at the second time, but she always oviposited on the very tip of a broken, dried-up, blade. The ova struck me as very small for the insect.—George T. Bethune-Baker, F.E.S., 19, Clarendon Road, Edgbaston. *November 21st*, 1906.

NOTES ON COLLECTING, Etc.

Another note on Nænia typica.—In reference to Mr. Colthrup's inquiry about *Naenia typica* (*anteà*, vol. xviii., p. 213), I may mention that I have never taken the insect at light or sugar, but have found it commonly at privet bloom just after dusk. Neither larvæ nor imagines are nearly so common in Kensington as they were three or four years ago. In 1902 and 1903 I could get the larvæ in some numbers off dock, but this year I have not seen half-a-dozen, and last year I saw very few more. The last remark also applies to *Arctia caia*, of which I did not see a single larva (*i.e.*, in Kensington) in 1905 or 1906.—G. D. Millward, Downing College, Cambridge. *November 1st*, 1906.

"Bath whites" for sale.—We have received from a correspondent the following: "Will you kindly put a notice in your next issue to the effect that two Bath whites (*Pieris daplidice*) were caught this year by me, one very good specimen in Devon, and one very poor one in Cornwall, and I should be willing to sell the former.—Yours truly, M. Lyon, Esq. *October 25th*, 1906." [We should prefer to insert "sale advertisements" on our tinted sheet at ordinary rates.—Ed.]

Manduca atropos at Mucking.—A tolerably perfect male specimen of this insect was brought to me on October 16th, having flown into a sitting-room the previous evening, evidently attracted by the light. This is the only specimen of which I have heard this year.—(Rev.) C. R. N. Burrows. *November 7th*, 1906.

Eupithecia succenturiata and E. subfulvata.—Referring to

articles in the *Ent. Record*, p. 261, *re Eupithecia succenturiata* and *E. subfulvata*, it may be of interest if I give my experience of the two species, for, in my opinion, they are unquestionably distinct. Some twenty years ago I collected between one and two hundred larvæ in Teesdale, Weardale, and also at Hartlepool, all from yarrow, they duly emerged in the spring, all *E. subfulvata*, with six or seven ab. *oxydata* included. A few years after that I beat one larva from *Artemisia absynthium* which yielded *E. succenturiata*. In the summer of 1900 I netted, close to Hesleden Dene, a female *E. succenturiata*, which deposited a few eggs. I fed the larvæ upon a species of southernwood, which I had growing in my garden, more like *Artemisia maritima* than the common southernwood; they fed up well, and next spring all emerged *E. succenturiata*, and, with the female, constitute my series of nineteen specimens. In October, 1901, I thought I would beat *Artemisia absynthium* for larvæ of, I hoped, *E. succenturiata*. I managed to get some thirty or forty larvæ (including a few *E. absynthiata*, which no one could confuse with either *E. subfulvata* or *E. succenturiata* larvæ), and next spring bred *E. subfulvata!* not a solitary *E. succenturiata*, and, of course, the few *E. absynthiata* larvæ I had got, emerged that species. I will not deduce any conclusions from the foregoing facts, but leave it to anyone interested in the matter to form his own. In beaten larvæ I certainly would not undertake to say whether they were those of *E. succenturiata* or *E. subfulvata*.—J. Gardner, F.E.S., 6, Friar Terrace, Hartlepool. *November 6th*, 1906.

Polygonia c-album and Agriades corydon in Oxfordshire.—The capture of *Polygonia c-album* in Oxfordshire is announced in that part of the *Annual Report of the Delegates of the Oxford University Museum for 1905* which relates to the Hope department. In a list of insects presented by Mr. W. Holland is included a specimen of this butterfly from Wychwood Forest, near Charlbury, June 26th, 1905, "when many other specimens were seen," Professor Poulton adding that the species had not been observed in this part of the Oxford district for many years. An account of its previous occurrences in the county at all would be interesting to collectors. Newman gives Bagley Wood, on the authority of W. H. Draper, but this famous preserve, where I sought *P. c-album* in vain twenty years ago, is in Berkshire; while Stainton, of the older writers, mentions no Oxfordshire localities. The same remark applies to *Agriades corydon*, now also reported by the Hope Professor, as captured on August 8th of the same year, "at the quarry near the old windmill on the Shotover road," nor does Newman give any county locality for it, though no doubt it extends on the chalk all along the Chiltern Hills, so far as they come into Oxfordshire, *e.g.*, in the neighbourhood of Chinnor (A. J. Spiller, *Entom.*, xxiv., p 3). Shotover Hill, however, is not composed of chalk, but consists largely, I believe, of Portland stone and sand, with a cap of greensand; and the existence of *A. corydon* in the vicinity is therefore doubly interesting.—H. Rowland-Brown, M.A., Harrow Weald. *October 29th*, 1906.

Information wanted concerning Psecadia pusiella.—Can any of your readers inform me whether there is a complete life-history of *Psecadia pusiella* published in British (or other) magazines? There is only one brood in the year, the larva hybernates small, begins to feed in April on *Pulmonaria officinalis*, and is fullgrown at the end of May. The imago is on the wing from the end of June till the beginning of

August. Can any other lepidopterist supply me with fuller details concerning the species?—M. Gillmer, 4, Elisabethstrasse, Cöthen, Anhalt, Germany. *October* 28*th*, 1906.

Resting-habit of Agriopis aprilina.—On October 19th, in company with Mr. Tonge, I had the pleasure of finding, in the New Forest, a specimen of this insect, at rest, on pale green lichen, on an oak trunk, about six feet from the ground. It had evidently been out some time, as the fringes were very much rubbed. My reason for recording this, is that I had enquired of many naturalists if they had ever taken this insect at rest on the tree-tunks, and Mr. Tonge had done the same, but we could find no one who had done so, and I was always assured that they rested on the ground among the herbage. I have always, however, had my doubts as to this, as, if this were so, the beautiful lichen-like marks and colour of *A. aprilina* would be purposeless. My opinion is that this insect rests generally on lichen, fairly high up the tree-trunks, and it is for this reason that it is not generally seen. The specimen which I found was beautifully protected, having chosen a patch of lichen exactly the same tint as itself, although another patch alongside was quite dark blue-green in colour.—C. W. Colthrup, 127, Barry Road, East Dulwich, S.E. *October* 25*th*, 1906.

COLEOPTERA.

Coleoptera in the Enfield district, 1906.—I have not been able to devote much time to collecting, but have been fortunate in turning up some interesting things, principally amongst the wood-feeders. The following list may be of interest to collectors in the London district. *Notiophilus rufipes*, Curt., Enfield and Winchmore Hill; *Badister sodalis*, Duft., Enfield; *Bembidium quinquestriatum*, Gyll., and *B. alucum*, Germ., on pavement, Enfield; *Quedius ventralis*, Ahr., hollow beech, Enfield; *Q. fulgidus*, F., vegetable refuse; *Q. brevicornis*, Th., nest of a wood-pigeon in hollow beech, Enfield; the same nest produced *Hister merdarius*, Hop.; *Xantholinus glaber*, Nor., beneath wet apple bark, elm bark, and in a hollow apple tree, in which were the grubs of *Eryx ater*, F.; *Scymnus pygmaeus*, Four., from willow bark at Waltham and Cheshunt; *S. minimus*, Ross., on wall at Enfield Lock; *Coccidula scutellata*, Hbst., on bulrushes at Tottenham and Waltham Abbey; *Symbiotes latus*, Redt., Waltham and Enfield; *Alexia pilifera*, Mull., fungi, Enfield; *Aulonium sulcatum*, Ol., Enfield, Waltham, Palmer's Green, Winchmore Hill, and Silver Street, Edmonton; *Paromalus flavicornis*, Hbst., Enfield; *Gnathoncus punctulatus*, Th., corn shop, Edmonton; *Orthoperus brunnipes*, Gyll., in fungi, Enfield; *Nitidula bipustulata*, L., *N. rufipes*, L., Waltham; *Lacmophloeus bimaculatus*, Pk., five examples from oak bark, Enfield; *Silvanus surinamensis*, L., corn shop at Edmonton, and in fungus on elm at Enfield; *Telmatophilus caricis*, Ob., Cheshunt; *Ptinus pusillus*, Sturm., occurred again in the corn shop at Edmonton, October and November; *Hedobia imperialis*, L., Enfield; *Meseum affine*, Boi., corn shop, Edmonton; *Ernobius mollis*, L., fir bark, Enfield; *Lyctus canaliculatus*, F., Enfield and Cheshunt; *L. brunneus*, Steph., one example on a beech log, Palmer's Green; *Cis hispidus*, Pk., *C. pygmaeus*, Marsh., *C. vestitus*, Mel., *C. fuscatus*, Mel., Enfield. Amongst the Longicornes some interesting things occurred, the best being a very

fine series of a *Tetropium*, which emerged in numbers from some *larch logs* discovered in a woodyard attached to Forty Hall, Enfield. My series includes the various forms previously recorded as *T. fuscum*, F., *T. castaneum*, L., and *T. crawshayi*, Sharp; all appear to belong to one species, *T. gabrieli*, Weise. The forms with bright red legs (*T. gabrieli*, Weise), and black legs (*T. crawshayi*), are the extremes, there being several intermediate forms with more or less black, red, or pitchy joints of antennæ, etc. There appears to be no reason for supposing this interesting beetle to be a recent introduction to the district. There are some extensive larch plantations in the north of Enfield, and the *Tetropium* burrows are very much in evidence where the timber has been used for making posts, fences, gates, etc. I have seen some logs which must have been exposed to wind and rain for many years, since the *Tetropium* larvæ did their work in loosening the bark. *Callidium variabile*, L., was abundant in oak logs in the same woodyard. I selected a very fine series from about 300 specimens observed. Many of these occurred in an old hawthorn stump, but did not differ from the oak forms. *Gracilia minuta*, F., and *Leptidia brevipennis*, Muls., were found on iron railings near a fruit store at Enfield. *Grammoptera holomelina*, Pool, was very scarce this year, only a few occurred where I took it in numbers last year. It is interesting to note the regular occurence of this insect for three years in succession. *Heledona agaricola*, Hbst., abundant in fungus on oak, Enfield; *Eryx ater*, F., a nice series from burrows of *Sinodendron cylindricum*, Enfield; *Phloeotrya rufipes*, Gyll., a pair from oak logs, Enfield; *Anaspis garneysi*, Fow., swept from flowers at Waltham Cross; *Scolytus pruni*, Ratz., *S. rugulosus*, Ratz., abundant in apple bark, Enfield; *Hylesinus crenatus*, F., *H. fraxini*, Pk., *H. vittatus*, F., and *Xyleborus saxaseni*, Ratz., in ash bark, Enfield. In addition to the above, I am indebted to my friend, Mr. G. Baldock, an enthusiastic lepidopterist, for some assistance during the winter of 1905, with coleoptera from various parts of Epping Forest. The best of his captures are *Megacronus inclinans*, Gr., *Quedius scitus*, Gr., *Endomychus coccineus*, L.; *Triplax russica*, L., *Opilo mollis*, L., *Scaphidema metallicum*, F., and *Trypodendron domesticum*, L. My captures in the forest include *Quedius ventralis*, Ahr., *Q. lateralis*, Gr., *Q. microps*, Gr., *Philonthus fuscus*, Gr., and *Choleva colonides*, Kr., from a starling's nest; *Ditoma crenata*, F., oak bark; *Cicones variegata*, Hell., in an old beech, where I observed the remains of *Prionus coriarius*, L., *Leptura scutellata*, F., and *Athous rhombeus*, Ol.—C. J. C. Pool, Enfield, Middlesex. *November 30th*, 1906.

CURRENT NOTES.

A trifle, in about 400 quarto parts, to contain 875 coloured plates, and 30000 figures with letterpress, entitled *The Macrolepidoptera of the World*, is in preparation by Dr. Adalbert Seitz, with several well-known helpers. One suspects from the advertisement that it is to be an illustrated catalogue. The Palæarctic section is to cost £5—100 parts at 1s. each, which cannot be obtained separately; still the text we are informed "gives all necessary information in a concise form, care being taken to avoid all unnecessary details." Considering the area to be covered we should like to have a definition of "necessary infor-

mation" and "unnecessary details." But apart from this if, as is stated, there is to be a reliable figure of each species of the Macrolepidoptera, mentioned in Staudinger and Rebel's *Catalog*, the plates alone should be well worth £5. We have not yet seen a part so can give no information first hand.

The year 1906 will be known in England as an "*exigua*" year. This species, so exceedingly abundant in the subtropical countries of the Old World, has become a terrible pest in Behar, where the larvæ sometimes almost entirely destroy the indigo plant. Not only do the larvæ of the early brood eat off the first leaves of the young (newly-germinated) plants, but those of the later broods swarm upon the cut plants, and are to be found in abundance upon indigo, steeping in the vats. In the *Agricultural Journal of India*, i., pp. 338-350, has just been published, a long, exhaustive, and illustrated account of the species—egg, larva, pupa, imago and habits in all stages, which is well worth notice. It is estimated that, on one farm alone, in 1905, above 250,000 larvæ of this species were destroyed. It has also been abundant in 1906. No wonder some of these species find themselves cramped and seek for pastures new.

The last meeting of the Entomological Club was held at 58, Kensington Mansions, South Kensington, on the evening of December 13th, 1906, when Mr. H. Donisthorpe was the host. The guests were received by Mr. and Mrs. Donisthorpe, and a very pleasant entomological evening was spent. Supper was served at 8.30 p.m., when among the members and friends we noticed Mr. R. Adkin, Professor T. Hudson Beare, Messrs. A. J. Chitty, W. J. Distant, J. C. Dollman, A. H. Jones, Rev. F. Morice, Messrs. W. E. Sharp, J. W. Tutt, and C. Waterhouse. An excellent supper was accompanied by a very pretty menu card.

Among much informal entomological chat at a recent entomological gathering, we learned that there is no immediate possibility of the Entomological Society of London being moved to the provinces, nor of its name being altered, but it was a pretty generally expressed opinion that the time had arrived when an election of Council and Officers should be held by the Fellows, to prevent things getting further into a groove. The council was enlarged some time since that there might be at least representative members from Scotland, Ireland, Cambridge, Birmingham, Liverpool, and other well-known entomological centres. Up to the present the increase appears to have only been used to the advantage of one particular centre.

Mr. A. Sich invited a few personal entomological friends to dine with him at the National Liberal Club, on December 15th. A very happy party sat down to dinner at 7.30 p.m., the guests including among others, Messrs. R. Adkin, F. N. Clark, A. Harrison, Hugh Main, R. South, E. Step, A. E. Tonge, H. J. Turner, and J. W. Tutt. A most enjoyable evening was spent by the "South London" men, and many informal entomological topics discussed. One wonders how much of the work that some entomologists undertake gets its preliminary start at one or other of these excellent social functions.

The *Entomologisches Jahrbuch*, for 1907, edited by Dr. Krancher, and published by Frankenstein and Wagner, Leipzig, at 1s. 6d., was, as usual, out well before time, having reached us in October, 1906. It contains the usual variety of entomological material, the monthly calendar, as before, being specially devoted to coleoptera, whilst there are

longer articles on general entomology, Lepidoptera, Coleoptera, Diptera, Hymenoptera, with short references to the literature, and an obituary of the year. There is a plate, depicting the genital organs of *Psychidea plumella* (under the name of *Rebelia plumella*), illustrating an article on the subject by Herr A. Meixner. On the whole, however, it is more particularly interesting to the coleopterist.

Mr. C. W. Woodworth sends a first class pamphlet of 152 pages, on "The Wing-veins of Insects" (published at the University of California, U.S.A.). The author, in his introduction, asks for the constructive criticism of specialists on his work, particularly in the direction of developing a general theory of venation that will serve in the interpretation of the facts that have been so richly accumulated. The work appeals to students of all orders, and should stimulate research along the lines indicated by the author.

Dr. Joy records *Laccobius sinuatus*, Mos., as a hitherto unrecognised British species.

The Hon. N. Charles Rothschild adds *Ceratophyllus borealis*, n. sp., to the flea fauna. The specimen, a ♀, was taken by Dr. Joy on the Isle of St. Kilda in July, 1906, and probably came from the nest of a gannet.

It is with the greatest regret that we have heard of the death of Mr. W. Chaney on November 3rd, 1906, at the age of 78, one of our earliest entomological acquaintances. His work on the fauna of the Rochester and Chatham district brought him into early communication with those young collectors who were natives of the district he worked so thoroughly. Later, as librarian of the South London Entom. Society, we met him constantly again, and his unfailing kindheartedness endeared him to all those entomologists with whom he came in contact.

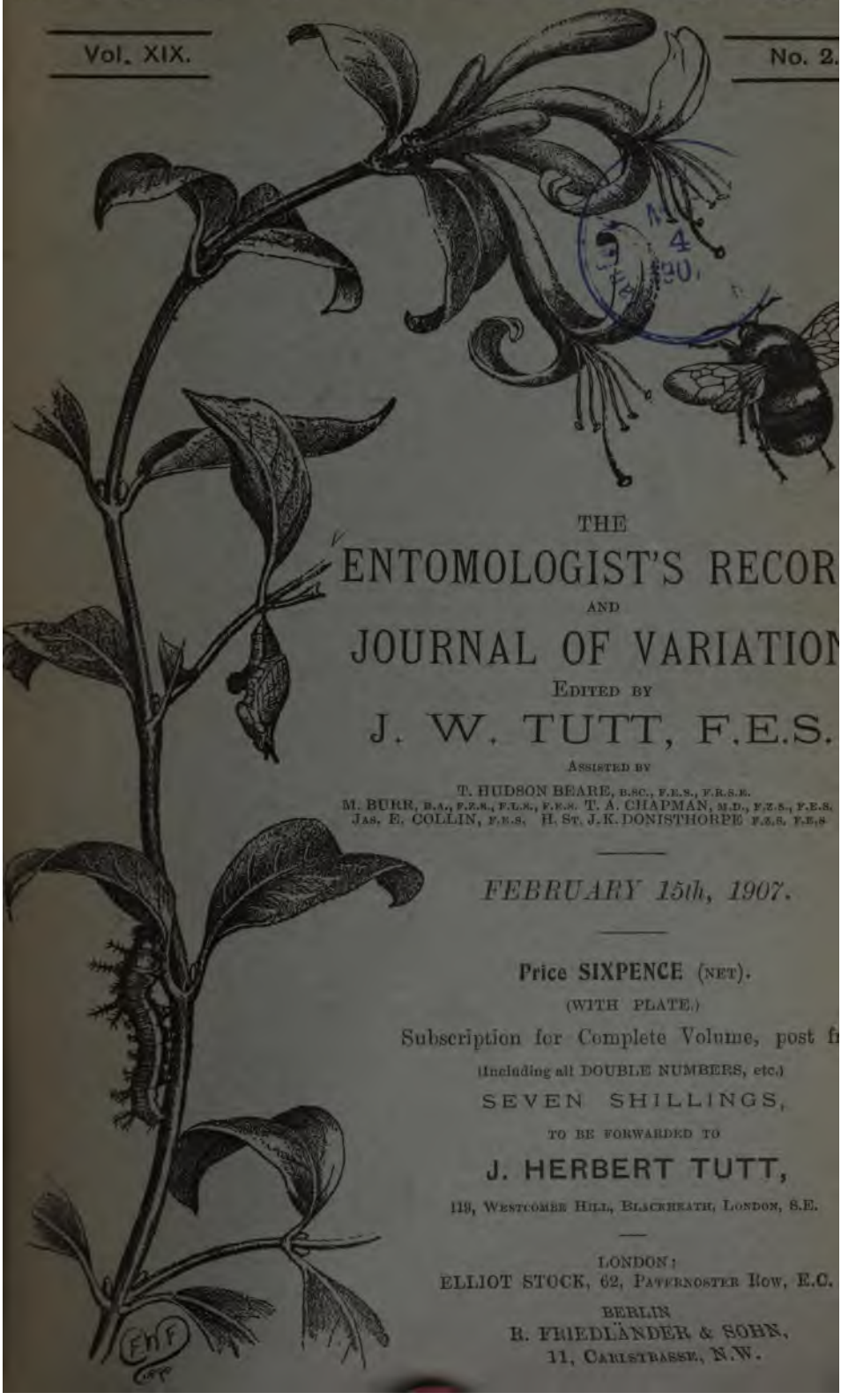
We have also to record the death of Mr. W. C. Boyd, which took place on September 18th last. He was better known to the older than the younger school of lepidopterists, although his annual appearance at Mr. Verrall's Club dinner brought him into contact with many of the younger men who were following in his footsteps.

The completion of Parts 1 to 20 of *The Natural History of the British Butterflies* gives a volume of nearly 500 pages, 20 full-page plates, a General Index to the whole volume, and a Special Index to the second (or systematic) part of the work. The species dealt with are treated as fully as our knowledge at the present time permits, and it should prove for a long time the reference work of British and Continental lepidopterists. The volume will be published, net, at 21s., by Elliot Stock, 62, Paternoster Row, E.C.

For a short time only, those lepidopterists who cannot conveniently purchase volume 1 of *The Natural History of the British Butterflies* in its complete bound form at 1 guinea, will be able to buy the 1s. parts weekly, fortnightly, or monthly, as desired, from Elliot Stock, 62, Paternoster Row, E.C. There are only a few copies left, in parts, and, as all the remainder will be bound, only those now in "part" form will be available in this way.

Subscriptions for 1907 are now over due.

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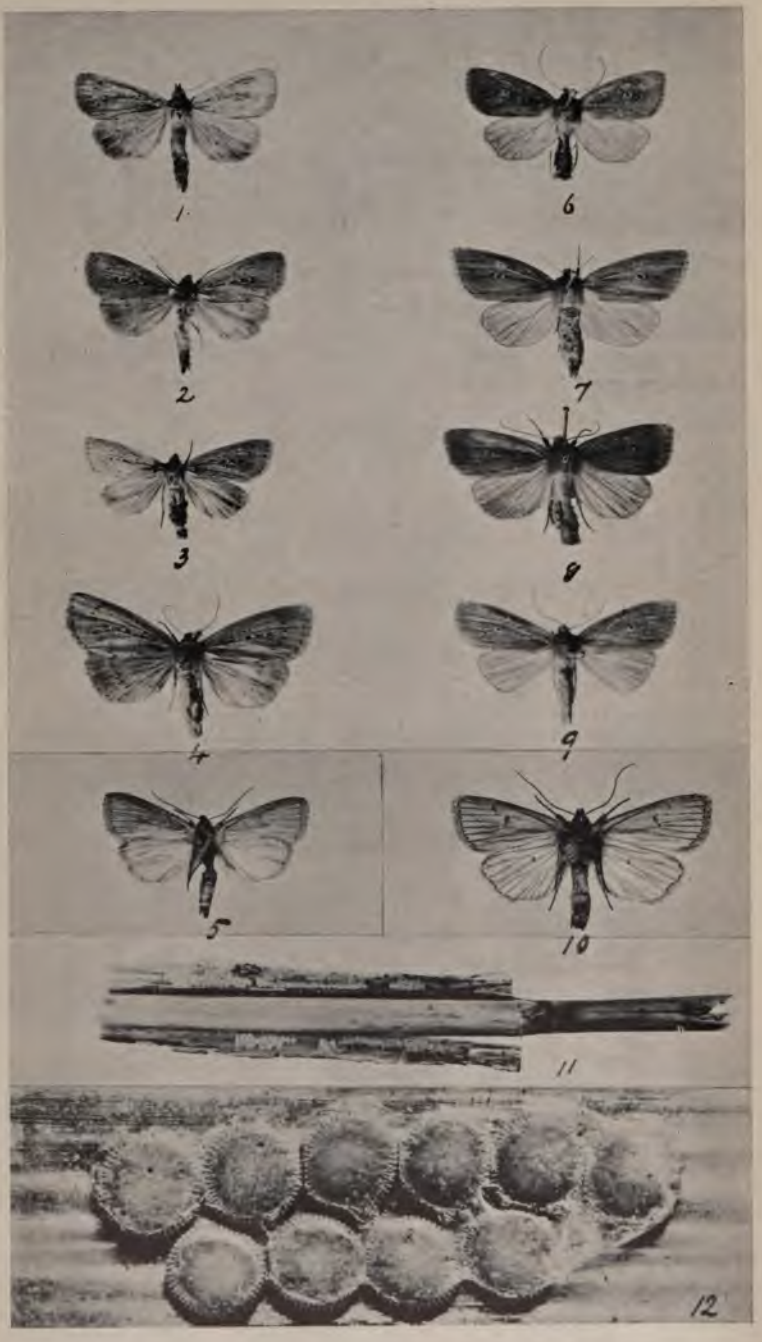
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Nonagria neurica, Hb., and N. dissoluta var. arundineta, Schmidt.
The Entom. Record, etc., 1907.

Retrospect of a Coleopterist for 1906.

By Prof. T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

The increase to our list during the past year has not been of so remarkable a character as that which I had to record for the year 1905, nevertheless, several most unexpected and striking additions have been made, altogether no fewer than twelve species and four varieties have been added to our list.

Hydrochus nitidicollis, Muls.—Recorded by Mr. H. St. J. Donisthorpe (*Ent. Record*, xviii., p. 133); the insect was taken in the River Meavy, near Plymouth, on April 13th last.

Dinarda pygmaea, Wasm., is another of Mr. Donisthorpe's records (*loc. cit.*, p. 217). The species was taken by Mr. Keys in Cornwall some two or three years ago, and was originally named for him as *dentata*, Grv.; it occurs with *Formica rufibarbis* var. *fusco-rufibarbis*, For. In introducing the species Mr. Donisthorpe gave a useful table showing the relationship of the *Dinarda* family to their various hosts.

Lomechusa strumosa, F. (*loc. cit.*, p. 159).—This is certainly the most interesting addition to our list during the past year, and Mr. Donisthorpe is to be congratulated on the success which has attended his careful work amongst myrmecophilous coleoptera. Single specimens of this beautiful beetle have been twice taken in this country before, but nearly 200 years have elapsed since the first of these records, and the beetle has long disappeared from our list. Mr. Donisthorpe's specimens were captured at Woking with *Formica sanguinea*, the first specimen being taken on May 25th, and six others on the 29th.

Homalota paradoxa, Rey (*Ent. Mo. Mag.*, xlii., p. 201).—This is one of the several additions due to the good work which Dr. Joy has recently been doing in regard to the coleopterous inhabitants of the nests of birds and small mammals. The insect occurred in moles' nests; two specimens had been taken some years ago by Mr. Champion, but the capture had never been put on record.

Quedius vexans, Epp. (*loc. cit.*, p. 200).—This addition, also due to Dr. Joy, is a very characteristic moles' nest species, and, in recording its occurrence, Dr. Joy gave a table which will be found very useful in identifying the species of the group of *Quedius* with red elytra and unicolorous antennæ.

Lathrobium laevipenne, Heer (*loc. cit.*, p. 55).—This record is due to Mr. W. E. Sharp, who captured a single specimen near Oxted in August 1905; it belongs to the red-winged group. Mr. Sharp gave a number of characters by which it could be distinguished from its close allies.

Euplectus tomlini, Joy (*loc. cit.*, p. 99).—Dr. Joy took sixteen examples of this species in February last in an old starling's nest, and subsequently bred others from the same nest. The species could not be identified with any known European forms, and Dr. Joy has, therefore, described it as new to science; it is apparently a well-marked species, abundantly distinct from other British members of the genus.

Corticaria crenicollis, Mannh. (*Ent. Record*, xviii., p. 276).—This is another of the numerous records of Dr. Joy. The species was taken at Basildon, Berkshire, in August last, from dead and quite dry oak branches; Mr. Pool has also taken the species at Epping, under bark. On examining the "Power collection," Dr. Joy found specimens of this

species mixed with *C. serrata*, and there are one or two other specimens in British collections.

Cryptomorpha desjardinsi, Guér. (*loc. cit.*, p. 275).—This cosmopolitan species has been taken by Mr. R. S. Bagnall in a cellar at his house at Winlaton-on-Tyne. A single specimen was taken by Mr. E. A. Waterhouse some fifteen years ago in London on a bunch of bananas. Though these specimens were most probably introduced, there is every possibility that the beetle will eventually become acclimatised and will, therefore, be quite as much entitled to a place in our list as many of the other cosmopolitan species which have gradually been introduced into this country.

Cardiophorus erichsoni, Buyss. (*Ent. Mo. Mag.*, xlii., p. 156).—This species was taken by Dr. Joy and Mr. J. R. Tomlin during their visit to Lundy Island last April. The specimens were found under small stones, or at the roots of grass. This species was introduced into our list by Mr. Champion under the name of *rufipes*, Fourc., nearly twenty years ago, but there was probably some mistake about the actual origin of this specimen, and, therefore, the Lundy Island captures are really additions to the British list.

Ptinus pusillus, Stm., (*Ent. Record*, xviii., p. 45).—Mr. Donisthorpe records this species from captures by Mr. Pool at a corn shop at Edmonton. It is a common species in France and Germany, and lives in granaries; it is probably another of those species which are being distributed by commerce all over the world.

Carida affinis, Pk., (*Ent. Mo. Mag.*, xlii., p. 220).—Dr. Sharp introduced this species on the authority of specimens taken by Col. Yerbury and Mr. G. C. Lamb, in Strathspey, in July last. The species occurred in fungus on old trees.

The following new varieties were also introduced into our list:—*Dromius agilis* ab. *bimaculatus*, Dej., by Mr. Donisthorpe (*Ent. Record*, xviii., p. 75); this aberration was taken by scraping the lichen off the bark of a tree at Battle, near Hastings. *Homalium caesum* ab. *subruficorne*, n.ab., by Mr. R. S. Bagnall (*loc. cit.*, p. 72), specimens were taken from a rotten *Polyporus*, at Gibside; the Rev. T. Wood has also taken this aberration at Rannoch; *Stenus ossium* var. *insularis*, n.var., taken on Lundy Island in August, 1905, by Dr. Joy, and described by him (*Ent. Mo. Mag.*, xlii., p. 5); *Lathrobium elongatum* var. *nigrum*, n. var., described by Dr. Joy (*loc. cit.*, p. 271) from specimens taken in Devon, in 1902.

The only note dealing with synonymy is one by Mr. G. Lewis (*loc. cit.*, p. 255), in which he states that, in his opinion, *Hister* 12-*striatus*, Schrk., and *Hister* 14-*striatus*, Gyll., are distinct species.

Of the above additions to our list, only one, I think, should appear in the supplementary list of "Beetles introduced by commerce since 1900, and since breeding in this country," which I suggested last year, namely, *Cryptomorpha desjardinsi*.

A considerable number of beetles, usually considered to be very rare, have been put on record during the past year, and a few of these records are now given:—*Eumicrus rufus*, Müll., taken by Mr. Pool at Enfield, and by Mr. Butler at Hendon; *Quedius longicornis*, Kr., captured by Mr Britten in flood refuse in Cumberland, and by Mr. Morley at Monk's Soham, Suffolk; *Donacia obscura*, Gyll., appears to occur in some numbers at Sutton Broad, where it was first taken by

Mr. Balfour Browne; *Oxypoda soror*, Th., taken by Mr. Donisthorpe and the writer on Snowdon; *Anisotoma lucens*, Fair., swept by Mr. Donisthorpe at Woodhay, near Newbury; *Henoticus serratus*, Gyll., taken by Mr. Donisthorpe near Newbury, and by Mr. Kidson Taylor in North Wales; *Cryptohypnus pulchellus*, L., taken by Mr. Black and the writer near Newtonmore; *Acrulia inflata*, Gyll., taken by Mr. Bagnall and the writer at Winlaton-on-Tyne; *Quedius riparius*, Kell., taken near Bakewell, in Derbyshire, by Mr. J. Kidson-Taylor; *Procas armillatus*, F., found near Dartford, by Mr. Jennings; *Lamprinus saginatus*, Gr., taken at Tubney by Commander Walker; *Euplectus minutissimus*, Aub., swept up by Commander Walker near Oxford; *Calosoma sycophanta*, L., is another of Commander Walker's many good captures, it was taken in the New Forest, another was taken in the Forest at Lyndhurst; *Carpophilus sexpustulatus*, F., taken by Mr. Bayford and Dr. Corbett near Doncaster, under conditions which apparently prove that it regularly breeds in this country in the open; *Acrognathus mandibularis*, Gyll., taken in some numbers by Mr. Champion at Horsell; *Otiorhynchus morio*, F., var. *ebeninus*, Gyll., taken by Mr. Kidson-Taylor in 1901, near Loch Assynt, in Sutherlandshire; *Sitaris muralis*, Forst., found in some numbers near Oxford, by Mr. Hamm.

A number of interesting articles have appeared during the year in the pages of the entomological journals. The important problems concerned with island fauna have been dealt with in an interesting paper by Dr. Joy on the coleopterous fauna of Lundy Island (*Ent. Mo. Mag.*, xlii., p. 1). Dr. Joy visited the Island in August, 1905, and in his article gives a complete list of the whole of the species of coleoptera which have so far been recorded from Lundy Island; up to the date of this article 260 species had been taken. It was in a later visit, in April 1906, when accompanied by Mr. Tomlin, that *Cardiophorus erichsoni* was added to our list. I published a note (*loc. cit.*, p. 77), giving a list of the coleoptera taken by Mr. W. Eagle Clarke on the remote Fair Isle.

The interesting antipodean field notes by Commander J. J. Walker, were, during the past year, continued and concluded in the *Entomologists' Monthly Magazine*, pp. 22, 50; these notes will undoubtedly prove of great value to any visitor to Australia who is anxious to do a little collecting while sight-seeing; the numerous hints as to the best localities, and the habitats of many of the more striking species, will undoubtedly save such a collector a considerable amount of time.

Mr. R. S. Bagnall in a paper entitled "Coleoptera imported into our northern ports" (*loc. cit.*, p. 36) gives a long list of introduced species, and a study of this list shows how important it is that some such arrangement should be adopted, as I suggested in my retrospect last year, for separating from the general list these introduced species.

Two or three interesting papers (in addition to those already mentioned), dealing more or less with synonymy and morphological characters for separating allied species, have appeared during the year. The Rev. G. A. Crawshay, in a paper entitled "Further notes on *Amara anthobia*, Villa," and the "Comparative Morphology of *A. familiaris*, Duft., *A. anthobia*, and *A. lucida*, Duft." (*loc. cit.*, p. 13), describes fully the characters which may safely be employed in separating these allied species, dealing with size differences, coloration differences, absence,

or presence, of prescutellary pores, etc. This paper embodies the results of a large amount of careful work, and should prove of great use to any collector who is in doubt as to which of these three species a specimen belongs.

In "Notes on the coleopterous genus *Dacne*, Latr." (*Ent. Record*, xviii., p. 72), Dr. Joy gives briefly the salient characters of all the European species of this genus, and explains carefully the characteristics which separate *D. fowleri*, Joy, from the allied species.

Two species which have long proved a stumbling-block to collectors are *Agabus affinis*, Pk., and *A. unguicularis*, Thoms.; Mr. F. Balfour Browne, in a paper illustrated with two carefully drawn plates (*loc. cit.*, p. 273), goes fully into the question of the characters which can be relied upon in separating the two species. There has been undoubtedly considerable confusion in the record of these two species, and it is very desirable that any coleopterist who has in his collection specimens of either, or both, of these species, should now carefully re-examine them in the light of the information given by Mr. Balfour Browne, and, if erroneous records have been made, correct them. There seems to be a marked difference in the recorded distribution of these two species in Great Britain.

Life-histories and similar problems have been dealt with in quite a large number of articles. First and foremost are Dr. Joy's extremely valuable papers on the "Coleoptera occurring in the nests of mammals and birds" (*Ent. Mo. Mag.*, xlii., pp. 198, 237). Dr. Joy first drew attention to the matter in a short note (*loc. cit.*, p. 39) in which he gave a list of rare coleoptera taken in birds' nests. Mr. Chitty (*loc. cit.*, p. 115) gave a list of the rare species he had been able to take in starlings' nests by following Dr. Joy's methods. Not only has Dr. Joy been able to add several new species to our list, but, in addition, he has taken, in numbers in many cases, species hitherto considered extremely rare and represented only in a few of our collections by odd specimens, such as *Quedius brevicornis*, Th.; *Heterothops nigra*, Kr.; *Aleochara spadicea*, Er.; *Microglossa marginalis*, Gyll.; *M. gentilis*, Märk.; *Philonthus fuscus*, Gr.; *Choleva colonoides*, Er.; etc. Dr. Joy has, in fact, opened up quite a new field of work, and his notes contain records of many interesting points in the life-history of these beetles and of the manner in which they have gradually adapted their means of defence to the ways of their hosts.

Other notes to which reference may be briefly made are the following:—"*Drilus flavescens*, Rossi, and its larva," by Mr. E. G. Bayford (*loc. cit.*, xlii., p. 267), with a description of the larva and a brief account of the rearing of a female imago from the larva; "Relation between *Epuraea angustula*, Er., and *Acrulia inflata*, Gyll.," by Mr. R. S. Bagnall (*Ent. Record*, xviii., p. 325); "Notes on the Stridulation of *Cychrus rostratus*, L., and on *Liodes*, Lat., a genus of night-flyers," by the same gentleman (*loc. cit.*, p. 73); "Distasteful Carabids," a short note by Mr. Donisthorpe, pointing out that the odour of *Carabus violaceus*, L., is the same as that of butyric acid (*loc. cit.*, p. 325). The same gentleman has contributed a series of valuable myrmecophilous notes for 1906, summarising all the work that has been done, mainly by himself, with ants' nests during the past year (*loc. cit.*, pp. 288, 317). Mr. W. E. Sharp, in a short article entitled "Some Notes on the Physiological Criterion of Species,"

emphasises (*loc. cit.*, p. 319) the importance of morphological characters in differentiating between closely allied species.

The Coleoptera papers in the *Transactions of the Entomological Society of London* for 1906 are comparatively few, but are of some interest. Mr. Jacoby (1906, pt. i., p. 11), in a lengthy paper, entitled "Descriptions of new Genera and Species of African *Halticinae* and *Galerucinae*," described no fewer than four new genera and sixty new species. This paper is one which must be studied carefully by all who are working at the coleopterous fauna of Africa.

Dr. G. B. Longstaff, in a communication (*loc. cit.*, p. 91) dealing with some bionomic points in certain species of South African lamellicorns, described observations he had made in the field during his recent visit to South Africa, both in regard to certain mimetic protective resemblances he had observed in some flower-frequenting species, and also in regard to the probable value to the insect of the exceedingly long hind legs, which are so characteristic of many South African *Hopliinae*.

In my "Retrospect for 1905," I briefly alluded to a paper by Mr. A. M. Lea in the *Transactions of the Ent. Soc. London* (1905, p. 365) on "The blind coleoptera of Australia and Tasmania." The author states that there are only eight blind species at present known from Australia and Tasmania, and curiously enough none of these are found in caves. He gives notes of all the species, and it is interesting to find that our well-known blind beetle, *Anommatus 12-striatus*, Müll., was taken by Mr. Lea at Hobart, Tasmania, at the roots of grass.

Mr. F. Balfour Browne has published a second paper on his study of the "Aquatic Coleoptera and their surroundings in the Norfolk Broads" (*Transactions Norfolk and Norwich Entomologists' Society*, viii), and, like the first paper, it is one of very high bionomic interest and value to students of British water-beetles. I have not yet had an opportunity of studying this paper in detail, and must reserve therefore my comments upon it for the present.

The 29th (1905) *Annual Report and Proceedings of the Lancashire and Cheshire Entomological Society* contains three papers of much interest to coleopterists, *viz.*, the Vice-Presidential Address of Mr. H. St. J. Donisthorpe, the main subject of which was the myrmecophilous coleoptera of Great Britain; "Notes on Manx Coleoptera," by Mr. J. R. Tomlin, with very full lists of the species which have been taken on the island; and, lastly, "Notes on the birth and infancy of *Dytiscus punctulatus*," F., by Mr. E. J. Burgess Sopp. The society is to be congratulated on the excellence of its papers, and on the good work it is doing in stimulating interest in the fauna of the counties of Lancashire and Cheshire.

The year which has just closed has not been quite such a fruitful one as 1905, nevertheless good work has been done, but the number of earnest workers must be larger if we are to increase in a satisfactory way from year to year the scientific knowledge of our beetle fauna.

The Identity of the British Nonagria neurica (*with plate*).

By H. M. EDELSTEN, F.E.S.

(*Continued from* p. 4.)

Guenée refers (*Histoire Naturelle des Insectes*, Noctuélites, i., p. 106),

in 1852, to *neurica*, Hb., as occurring in July and August in Germany and England, as being scarce, but, having recently been taken in England, prophesies that it will soon be distributed in collections, he says the illustration in Hübner is altogether too big and gives a very false idea of its colour, which would be the case as he evidently refers to var *arundineta*, Schmidt. He then describes *N. dissoluta* as a separate species, and says: "It is said that this *Nonagria* must be a variety of *neurica*; I cannot authoritatively say, never having raised the point, and never having seen the two species, but this I can say, that, among the numerous *neurica* that I have observed, I have never found a single intermediate specimen." He notes:—

N. NEURICA, Hb.—*Larva*, Tr.: Germany and around Darmstadt, England, in June and July. Coll. Div. Always rather scarce, but as it has been found lately in England, it will soon be distributed among collections. Hübner's figure altogether too large, gives a very false idea of its colour.

N. DISSOLUTA, Tr.—*Larva*, Ignot: It is said that this *Nonagria* must be a variety of *neurica*. I cannot authoritatively say, never having raised the point, and never having seen the two species, but this I can say, that among the numerous *neurica* that I have observed, I have never found a single intermediate specimen. It has, at first view, the aspect of *paludicola*. The forewings are of a brownish colour, without any markings except the reniform, which is black, shaped like a Z, and surrounded with a yellowish border in the upper portion, and white in the lower. The hindwings are of a bright grey colour, with the base whitish. Beneath, the four wings are of a dirty whitish-brown, with a central lunule and a row of marginal blackish dots. Environs of Darmstadt. Coll. Bdv.

In 1857, Stainton describes (*Manual*, i., p. 193) *arundineta* as *neurica*, gives Treitschke's description of the larva, and mentions Yaxley as a locality.

In 1858, Schmidt separates (*Stett. Ent. Zeit.*, xix., pp. 367-370) the two species:—

1. *Neurica*, Hb., less robust, white-collared, and with no marks on the underside except the circular line.
2. *Arundineta*, with distinct lunules on undersides.

He also mentions that the two insects refused to pair. He then says: "*Neurica* occurs here in two forms, one of which, illustrated by Hübner, fig. 381, I have considered and sent away as a variety, and the other, illustrated by H.-Sch., figs. 347 and 348, as a good species. Although the two are very similar to each other, yet they are, in many respects, stable, and so different that I am, for instance, never in doubt as to which of the two forms the specimen belongs. Both forms vary considerably in colour, and in a similar way; but the former does not do so to the same extent or so frequently as the latter. The size, shape of the wings, and markings are almost the same in both. The difference in colour and markings is not so noticeable as is the much weaker build of the body in Hübner's form compared with Schmidt's, although the length of the body and the size of the wings may be the same in both forms. This is more strikingly shown in living specimens than in dried ones. The first form has a white-bordered collar, and the latter an unicolorous one. The wings appear wider in the former, and the ground colour of the forewings is usually yellowish reed-coloured; in the latter form it is, on the whole, darker—greyish, brownish, reddish, and yellowish, in stronger gradations. The males, especially, differ in having the dark longitudinal stripe in the middle of the forewing much weaker in the former variety, and the spots in it are only indicated below by a pair

of white points, while the longitudinal shade is stronger in the second variety, and the reniform is generally quite visible. Furthermore, the underside of the latter form is distinguished by a sharp and stable central lunule on all wings, as well as by some marginal marks, as against the former, which has no mark here except the arched line. The former variety appears some three to four weeks before the latter, and flies singly about reeds in the evening in several localities. Although not scarce in some localities, the other is only to be found in two localities situated near one another, and most frequently occurs here, as a larva, together with that of *paludicola*. But their number has of late been smaller there year by year, while the former form seems to have multiplied and spread in the same proportion. Their flight, too, is essentially different. While the former variety flies easily and more slowly, the other one shoots away with more powerful flight, almost like *paludicola* and *nexa*. I have bred Herrich-Schäffer's form for several years, and also communicated special facts about their habits, which correspond in their essential parts with Treitschke's statements, in my addendum to "Uebersicht Mecklenb. Lepidop." (*Archives of the Society of Friends of Natural History in Mecklenburg*, v., pp. 137 *et seq.*). On the other hand I have, so far, obtained Hübner's variety almost exclusively by catching, and have only lately observed it more closely, and have only bred it singly from the pupa. As regards its larva, which I am certain I have often seen, although I am not certain of having bred the moth from it, I beg to point out that I scarcely noticed any difference between the two in their way of living, and in their general build, except that they appeared considerably earlier, and were always met with singly in other localities. Also, after very closely examining two pupæ found here a few years ago, I did not notice that they differed from the more robust variety except that they appeared somewhat thinner and more greenish-yellow, and were also lying in the reed-stem somewhat higher from the ground (some widths of the hand above the water) than seems to be the rule with the other. From one of these pupæ a fine ♀ of the first variety emerged very late in the season, and, at the same time, a ♂ of the other species appeared. I availed myself of this fortuitous event, which I had long desired, to try whether the two varieties would copulate, which I always noticed took place, in the case of the more robust variety, as soon as both sexes were together in the receptacle, and mostly, immediately after development. Being placed together, they did not appear to be inclined that way, although they were flying together for two evenings. Now what especially confirmed my belief that the two were different species, was when, on the third evening, a ♀ of the second variety came out, with which the ♂ copulated at once. From all this, I think I am entitled to the assumption that the two varieties referred to, previously united as *neurica*, are two different species, even if, on closer examination, their larvæ and pupæ should not visibly show much difference. The name *neurica* must remain with the older Hübnerian variety, and the other, Herrich-Schäffer's variety, must, therefore, have a new name. As this one occurs deeper in the reed-bed, more in the thicket of it, I call it *arundineta*. I cannot compare Hübner's illustration for the present; I have seen it but once, and only remember to have recognised by it my first variety. Herrich-Schäffer's successful illustrations decidedly represent my second

variety—*arundineta*. In his *Syst. Bearb. d. Schmett. v. Europa*, ii., p. 244, no. 186, he calls the Hübnerian illustration 'totally defective in its outlines, forewings much too large,' which is true, perhaps, only in comparison with his variety, my *arundineta*. *Neurica*, Hübn., often has, in reality, wider forewings, and also differs sometimes in the outlines of the same from *arundineta*. After I had sent Herrich-Schäffer one of each variety, this author at once agreed with me that the two were different species, and recognised that the first variety tallied with Hübner's illustration. I have sent away some of both for years, *arundineta* in considerable quantities, and, therefore, specimens of these species will be found in many collections. Whoever has one variety only might be in doubt as to which species he has. To such the remark will be sufficient that a distinct central lunule on the underside of each wing is a criterion for *arundineta*, while *neurica* never has any mark there. As regards the early stages, I shall shortly have occasion again to make further observations, and I shall endeavour, later on, to again give the two varieties an opportunity for mutual copulation, if I should be successful in any way in having both species emerge at the same time. As far as I know, *neurica* has previously only been found by Hess near Darmstadt, and some specimens recently sent by him, which I have seen, belong to my first variety. I do not know whether *arundineta* was found there also, or in what other localities it has been found, but I do know that a moth, closely allied to this variety, formerly also united to *neurica*, but separated from it by recent authors and called *hessii*, has also been observed only at that locality. Further, it is said to have the same way of living as *neurica*, but I have not been able to ascertain whether this applies specially to the general habits of the larva. Exact data in this respect would be of the greatest interest. I have not yet observed this variety in this region, and I have only myself seen two or three old specimens of this moth. *Arundineta* stands between it and *neurica*. I never saw real transitions from one to the other, such as Treitschke says he noticed. Perhaps he saw all the three species, and was deluded into that supposition by *arundineta*.

In 1859, Doubleday (*Synonymic List*) adopts the name *neurica*, Hb., and gives us as a synonym, *hessii*, Bdv.

In 1860, O. Wilde describes (*Plants and Larvae of Germany*, pt. 2, pp. 185-6) the larva of *neurica*, Hb., as "of a bluish-grey colour, with three indistinct stripes on the back," and the larva of *arundineta*, Schmidt, as "of a dirty white, with a reddish tinge on the back." He also figures (pl. v., fig. 49) the pupæ of each, which are different. His comparison reads :—

N. NEURICA*, Hb. (var. *hessii*, Boisd.); H.-Sch., 2, 244; Hb. 381; St. E. Z., 4, 345, v. 19, 367; Hb., 659-661, var. *hessii*.—*Larva:* Slender, slightly arched, with long anal claspers, dull bluish-grey, with three indistinct light grey stripes upon the back, between which, on each segment, stands a black wart, always occupied by one little hook. Spiracles black. Anal plate yellow, dotted with brown. Abdomen and hindlegs whitish-grey, lower part marked with black. Neck-plate yellow-brown, dotted and margined with dark brown. Prolegs grey, marked with brown. Head black-brown. 9'''-1''·0'''. *Pupa:* Small, slender, with a wedge-shaped "beak" (headpiece), and many small hooks and bristles on the stalk-shaped cremaster (pl. 5, fig. 49).

* Treitschke (*Die Schmett.*, ii., 2, p. 319), under *neurica*, describes the larva belonging to *arundineta*.

N. ARUNDINETA, Schmidt, "Stett. Ent. Ztg.," xix., p. 369.—*Larva:* Shaped like that of *neurica*, dirty white, back of a light reddish tinge. Upon tho 2nd and 3rd segments are always eight fine brown tubercles in a slanting row, upon the back of the following segments there are always four black tubercles occupied with one short bristle. Spiracles white, edged with black, surrounded with three fine little black warts; similarly coloured very fine little warts on the outside of the light-coloured hindlegs, studded with one row of brown hooks. Scutellum and anal plate brown-grey, always with four larger and many smaller brown warts. Prolegs yellow-grey with brown hooks. Head round, slightly curved, dark brown. *Pupa:* Brown-yellow, slender, with the last segment rounded off, with two long diverging bristles and two short little bristles, also two similar finer ones on the subdorsal portion of the last segment. Lives in June in the stem of *Phragmites*, and pupates in the lower part of the stem, or in the old stems, at the beginning of July, placing itself head downwards; the emergence-hole below, with a web under and above itself forming a puparium.

(*To be continued.*)

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from* p. 21).

GENUS III: PTEROLEPIS, Rambur.

This genus resembles *Gampsolceis* in the somewhat long plantulæ, but differs in the rudimentary and squamiform elytra, and slightly upcurved and sharply pointed ovipositor. In appearance it more closely resembles the genus *Rhacocleis*. There are two species known, both confined to Spain.

TABLE OF SPECIES.

1. Posterior femora long and slender; elytra ♂ not covered by pronotum; anal segment of ♂ terminating in an obtuse triangular lobe, ending with two small spinules; cerci strongly curved in ♂ ..	1. SPOLIATA, Rambur.
1.1. Posterior femora shorter and stouter; elytra ♂ almost entirely covered by pronotum; anal segment of ♂ prolonged in middle to acute and very spiny triangular lobe; cerci ♂ nearly straight, but slightly curved at the apex	2. CORDUBENSIS, Bol.

1. PTEROLEPIS SPOLIATA, Rambur.

Frons pale; pronotum convex above, and reddish, the side flaps with pale borders. Length of body, 23mm. ♂, 26mm. ♀; of pronotum, 7mm. ♂ and ♀; of elytra, 4mm. ♂, 2·5mm. ♀; of posterior femora, 28mm. ♂ and ♀; of ovipositor, 18mm. ♀. Length of slender part of posterior femora, 14mm.

A native of the mountains of Andalusia from Granada to Malaga; also at Cartagena.

Var. MINOR, Bol.

Smaller and darker, anterior femora with only two spines; length of body, 20mm. ♂ and ♀; of pronotum, 5mm. ♂ and ♀; of posterior femora, 23mm. ♂ and ♀; of ovipositor, 15mm. ♀.

Recorded from Chiclana.

2. PTEROLEPIS CORDUBENSIS, Bolivar.

Resembles the preceding, but the head is larger, the elytra are shorter and nearly completely covered by the pronotum; the posterior femora are relatively shorter and stouter. Length of body, 26mm. ♂; of pronotum, 8·5mm. ♂; of elytra, 1mm. ♂; of posterior femora, 24mm. ♂; of slender part of posterior femora, 10mm. ♂.

Discovered at Cordoba.

Genus IV: Scirtobænus, Pantel.

This genus includes two small Spanish species. It falls into the group with two terminal spines on the posterior tibiæ, and, as in the following genus, the plantulæ are about as long, but never shorter than, the first tarsal segment; the cerci of the male are conical, and incurved.

Table of Species.

1. Smaller (14mm.-16mm.); anterior femora unarmed beneath; anterior tibiæ with four spines above on outer side, and none on inner side	1. grallatus, Pantel.
1.1. Larger (22mm.); anterior femora with three black spines beneath; anterior tibiæ with four spines above on outer border and one on the inner border	2. lusitanicus, Bol.

1. Scirtobænus grallatus, Pantel.

Very slender and elongate; grey, marbled with brown, shading into olive. Length of body, 14mm.-16mm. ♂, 13mm.-16mm. ♀; of pronotum, 3·8mm. ♂ and ♀; of elytra, 1·9mm. ♂, 1·2mm. ♀; of posterior femora, 17mm. ♂, 17·8mm. ♀; of ovipositor, 11·2mm. ♀.

Spain: Tarancon, in province of Cuenca; Brunete, in the province of Madrid; Talavera; Cordoba. In Portugal, at Castella Branco.

2. Scirtobænus lusitanicus, Bolivar.

Slightly larger than the preceding; differs in the armature of the anterior legs, as indicated in the table; the anal segment of the male has a rectangular lobe in the middle, and a longitudinal sulcus; cerci sharp, and strongly curved. Length of body, 22mm. ♂; of pronotum, 6mm. ♂; of elytra, 2·8mm. ♂; of posterior femora, 23mm. ♂.

Discovered at Castello Branco, in Portugal.

Genus V: Rhacocleis, Fieber.

This genus is allied to the preceding, but consists of larger insects; the cerci of the male are conical, but also strongly toothed.

Table of Species.

1. Side flaps of pronotum with pale border only posteriorly, or, if continued along lower border, very narrow (posterior femora underneath with spines on inner margin only).	
2. Cerci ♂ incurved, hardly longer than subgenital lamina; latter triangular in ♀	1. discrepans, Fieber.
2.2. Cerci ♂ nearly straight, slender, twice as long as subgenital lamina; latter in ♀ transverse	2. bormansi, Brunner.
1.1. Side flaps of pronotum with whole lower side pale-bordered.	
2. Posterior femora beneath with five to seven spines on each side; subgenital lamina ♀ truncate ..	3. annulata, Fieber.
2.2. Posterior femora with only inner margin of underside spined; subgenital lamina ♀ bi-lobed	4. neglecta, Costa.

1. Rhacocleis discrepans, Fieber.

Ferruginous-brown, varied with darker and with yellowish; the females are often unicolorous brown; pronotum with a pale median band, the side flaps chestnut, with a narrow pale border; elytra of male hardly passing the pronotum; femora marbled. Length of body, 15mm.-23mm. ♂, 16mm.-26mm. ♀; of pronotum, 5mm.-7·5mm. ♂,

5·2mm.-8·5mm. ♀; of elytra, 1·5mm.-2mm. ♂, ·5mm. ♀; of posterior femora, 17mm.-22mm. ♂, 19mm.-25mm. ♀; of ovipositor, 14mm.-19mm. ♀.

A native of southern Europe, from France to the Bosphorus. In France it is rare, but has been taken near Bagnols in Var, la Rouvière, and a few localities in Savoy. In northern Italy, it had been taken at Venice, Basilicata, and Voltaggio, but is nowhere common. It is commoner in eastern and southern Europe.

2. Rhacocleis bormansi, Brunner.

Differs from *R. discrepans* in the nearly straight cerci, which are much longer and more slender, and in the transverse subgenital lamina of the female. Length of body, 19mm. ♂, 22mm. ♀; of pronotum, 7mm. ♂, 7·2mm. ♀; of elytra, 2mm. ♂, ·5mm. ♀; of posterior femora, 22mm. ♂, 26mm. ♀; of ovipositor, 19mm. ♀.

Common among shrubs, from July to the middle of October, in north Italy, at Voltaggio, Pegli, and Genoa.

3. Rhacocleis annulatus, Fieber (=*brisouti*, Yersin).

Somewhat larger than the preceding species; the whole of the lower part of the side flaps of the pronotum is broadly bordered with yellow; the cerci of the male are straight and pointed, with a short basal spine. Length of body, 20mm. ♂, 29mm. ♀; of pronotum, 7mm. ♂, 8mm. ♀; of elytra, 2·5mm. ♂; of posterior femora, 23mm. ♂, 27mm. ♀; of ovipositor, 19mm. ♀.

A native of southern Italy; Sicily, Palermo, Catania.

4. Rhacocleis neglectus, Costa.

Resembles the preceding, but differs in the anterior and middle femora, which have black spots on the outer upperside beyond the apical black ring; in the female, the posterior femora have only the lower margin spined on the underside, and in the male the outer margin has but a few spines; the subgenital lamina of the female is deeply emarginate, with pointed lobes, and the seventh ventral segment is not gibbous, as it is in *R. annulatus*. Length of body, 24mm. ♂, 31mm. ♀; of pronotum, 7mm. ♂, 9·5mm. ♀; of elytra, 1·2mm. ♂, 0mm. ♀; of posterior femora, 24mm. ♂, 30mm. ♀; of ovipositor, 21mm. ♀.

There are some examples of this species in the Florence Museum labelled "Catania."

(*To be continued.*)

Notes on Coleophora badiipennella.

By HENRY J. TURNER, F.E.S.

On May 8th, 1904, in the same lane, south of Lewisham, and very near to the spot which I have previously referred to as the home of a colony of *C. solitariella*, I met with a number of cases and larvæ of *C. badiipennella*, on elm. These cases were less upright than those of *C. limosipennella*, but still there was a certain amount of variation in the obliquity of the mouth opening, so that some were almost prone on the leaf, and the mouth opening might, perhaps, be numbered "one" according to Wocke's method (*Schmett. Deutsch.*, 1876). The colour of

the cases was a dull black and very distinctive from that of any case I have seen of *C. limosipennella*, which is only of shades of brown, the colours of the dried portions of the leaves used in their formation. The anal end has two valves like that of *C. limosipennella*, but they are not nearly so closely adpressed, nor are the margins so much extended outwards. The cases are, when of full size, always smaller than those of *C. limosipennella*.

During the pupal stage the mouths of the cases are filled with a very white fibrous substance, and, at times, many cases show white edges to the valves, but this latter generally disappears. The cases are made of the leaf cuticle, just as the case of *C. limosipennella*, but this latter species does not stain the case by a secretion, as does *C. badiipennella*. The larva of this species lives in a rough, parti-coloured, curved case, in the winter, very similar to that of *C. fuscedinella*, *C. lutipennella*, *C. nigricella*, etc. In fact, as yet I have been unable to find any characters by which to distinguish the hybernating cases of these species. This was the first species in which I had actually seen the head of the larva thrust out from the anal opening. Of course, this must occur during the various enlargements of the cases. The larvæ of all the species must be able to undergo extreme compression and contortion in squeezing between the closely adjoining cuticles of a leaf, and also when turning round in their narrow tubular cases, which are often of scarcely more diameter than the body of the larva.

The larva of this batch commenced pupating about May 27th, and the first emergence took place on June 22nd. The larva is of a glossy brown-yellow colour. The head-shield is black, but the other plates are not quite so dark. All three thoracic segments have, on their sides, small, dark, dot-plates, that on the 1st being the largest, the 2nd is faint, and the 3rd is only just apparent. The 1st thoracic segment has a large dorsal plate, with a slight median suture from front to back, scarcely perceptible in front, but wider at the rear. The 2nd thoracic segment has two triangular plates, with their bases approximating in the centre, the apices being long pointed; they are of a fainter black than the plate on the 1st segment. There are no dorsal plates on the 3rd thoracic segment. There are only three pairs of abdominal claspers.

I have not discussed the point as to whether we have two species under this name. Some of our leading entomologists consider that their observations point in that direction. So far my own experience of the species is too limited to have any decided opinion on this question. It would be interesting if others would give us their observations on this point.

One of my cases clearly illustrates the fact that the larva of this species not only lines the case, but stains the leaf cuticle used in its formation. The staining process has begun along the neighbourhood of the upper and lower sutures which have already become black.

Butterflies at Wimbledon in 1905 and 1906, with notes on the aberrations taken.

By RALEIGH S. SMALLMAN, F.E.S.

During the last two years I have done most of my collecting for butterflies on and near Wimbledon Common, and, although all the

species taken are generally common in England, still I thought a few notes, with special reference to the more interesting aberrations of those taken, might be of some interest. Butterflies are rather poorly represented in this district, *Augiades sylvanus* and *Adopaea flava* being the only two species of "skippers" taken, and neither of these commonly. *Rumicia phlaeas* has been very common, especially during August, 1906. The specimens show a good deal of variation in size, colour, and size of dark markings. One specimen (June 3rd, 1906) measures just over 22mm., and one (also June 3rd, 1906) measures just 32mm. Specimens of ab. *intermedia*, Tutt, and ab. *caeruleopunctata*, Rühl, were taken. The size of the copper-coloured marginal band on the hindwings is very variable, being, in some specimens, reduced to a narrow band with fairly large wedge-shaped projections. The size of the spots on the forewings of the specimens taken in August, 1906, are particularly large but not so dark as usual, and the veins are marked in dark, and several specimens are suffused with dark grey, especially towards the base of the forewings (ab. *initia*, Tutt), and some have distinct tails (ab. *initia-caudata*, Tutt), as have some of the unsuffused specimens. Some of the specimens taken in August, 1906, are very similar to ones obtained by Mr. Merrifield by subjecting the pupæ to a temperature of 80° to 90°, hence I assume the hot summer was the cause of this variation.* The only "blues" I have taken here are *Celastrina argiolus* (not common) and *Polyommatus icarus* (common). The males of *P. icarus* are fairly constant in colour, all being lilac-blue, but one specimen (August 5th, 1906) has a distinct trace of a marginal row of black spots on the upperside of the hindwings (ab. *celina*, Oberth.). In size the males vary from 26mm. (August 5th, 1906) to 32·6mm. (August 13th, 1906). The underside of the males vary from the usual blue-grey to a rich brown. The colour of the females are more variable, two (August 8th, 1906) being entirely brown on the uppersides with orange marginal spots (ab. *iphis*, Baumh.), and one (August 6th, 1906) is almost completely lilac-blue, but ab. *caerulea*, Fuchs, appears to be the usual form. Two males (August 13th, 1906) have but one basal spot on each forewing (ab. *iphis*, Meig.), whilst one female (August 6th, 1906) has the left underside typical and the right one like ab. *iphis*, Meig. In size the females are rather constant, only varying from 25mm. (August 8th, 1906) to 30mm. (August 11th, 1906). Of the "whites" taken nearly all belonged to the first brood, *Pieris brassicae* being the rarest of the three and *P. rapae* the commonest. Those *rapae* taken in May and early June, consisting of var. *metra*, St., but the females taken in 1906 were of a distinctly yellower shade than those taken in 1905. Two females (September 2nd, 1906) of the summer brood are almost indistinguishable from the spring brood. *Gonepteryx rhamni* is fairly common in this district. I have never taken any of the "fritillaries" in or near Wimbledon, but believe *Dryas paphia* is to be taken occasionally on "the common." Of the Vanessids I have not taken either *Vanessa io* or *Eugonia polychloros* here. *Aglais urticae* is common and variable in size, varying from 53mm. (September 10th, 1906) to 37mm. (June 30th, 1906, bred) (ab. *pygmaea*, Rühl), but this small specimen is one of a bred series which was accidentally more or less starved. The size of the two central spots

* See *Trans. Ent. Soc., Lond.*, 1893, pp. 55 to 67 and pl. iv., fig. 1 and 1*a*.

varies a good deal in the specimens, and the ground colour varies from the dull yellow-red to the rich red-brown form. *Pyrameis cardui* occurs, but rather sparingly. *P. atalanta*, however, is fairly common but not at all variable, one specimen (September 17th, 1905) having the red transverse band almost divided in two, and thus approaching ab. *fracta*, whilst several of the others have this band divided to a less extent. In size the specimens vary from 65mm. (September 16th, 1905) to 55mm. (September 10th, 1905). Of the Satyrids *Epinephele ianira* and *E. tithonus* occur, but I have never taken either in good condition here. *Coenonympha pamphilus* is abundant and variable. In size the specimens vary from 33mm. (July 4th, 1905) to 26mm. (August 30th, 1906). Besides the two aberrations mentioned on page 338 of vol. xvii., of the *Ent. Rec.*, I have taken a few specimens of ab. *ocellata* and one of ab. *obsoleta*. Specimens may also be obtained with dark marginal bands approaching ab. *lyllus*, Esp., and I have a specimen with the underside of the hindwings of a dark red-brown, only varied by a light curved line in the centre, thus approaching ab. *unicolor*.

Butterflies in Eastern Switzerland in 1906.

By J. N. KEYNES, M.A., D.Sc., F.E.S., and G. L. KEYNES.

Having had several entomological seasons in the Rhone Valley and the Bernese Oberland, we decided that we would, in 1906, go further east. We accordingly made the Engadine our head-quarters. The district is well known to entomologists, and we did not discover much in the way of fresh localities; but the information as to dates, etc., given in the following extracts from our entomological diary, may be of interest.

June 26*th*.—Between Mühlehorn (on the Walen-See) and the Thalalp-See. *Araschnia levana* was abundant and in fine condition. We also took six *Parnassius mnemosyne* and two *Brenthis thore* (both ♂ s) freshly emerged. ♀ s of *Nemeobius lucina* (a finer race than that met with in England) were abundant; the ♂ s appeared to be over. Amongst our other captures were *Nisoniades tages* (very large and fine), *Pieris napi* var. ♀ *bryoniae* (worn), and *Euchloë cardamines* (♀ s still in good condition).

June 27*th*.—Weesen Marsh. We took good series of *Lycaena arcas*, *L. euphemus*, and *Coenonympha typhon*. Even within the marsh itself, however, these species were extremely local, and it took some time to discover the right places for them. Of the two blues *L. arcas* was much the rarer; we did not, in either case, meet with many ♀ s. Some of the specimens that we took of *C. typhon* were very fine. *Brenthis ino* was another insect common in the marsh, and *Nomiades semiargus* was larger and finer than any we have met elsewhere. We took a single specimen of *Cyclopides palaemon*. The heat was extreme.

June 29*th*.—The Dischma-Thal, leading from Davos to the Scaletta Pass. Cloudy until mid-day, then heavy rain, followed by intervals of sunshine. There were never many insects flying. We took *Brenthis euphrosyne* (small and dark) and *Pararge hiera* (two ♂ s and one ♀), but met with little else of interest.

July 1*st to* 3*rd*.—Neighbourhood of Alvaneu Bad. We found Alvaneu Bad a very good entomological centre, and on July 1st noticed, within half-a-mile of the hotel, nearly fifty different species of butter-

flies. Our most interesting discovery was a wood in which *Brenthis thore* was plentiful, though, unfortunately, the ♂s were rather *passé*. The insect seemed to be a less active flyer than in the neighbourhood of the Walen-See, and it was not unlike *Pararge egeria* var. *egerides* in its habits. Its wings appeared to get chipped and torn very soon, in consequence of its way of fluttering through the branches of the trees and shrubs. We took four *Limenitis populi* ab. *tremulae:* three of these were in first class condition, the fourth was a poor specimen and we let it go. This insect is not difficult to capture when it comes down from the tops of the trees. It may be interesting to note that two of our captures were made between 10 a.m. and 11 a.m., and the other two between 1 p.m. and 2 p.m. One of the latter was a ♀. Other captures were *Chrysophanus hippothoë* var. *eurybia*, *Lycaena alcon* (1 ♂ and 1 ♀, very large), *Polyommatus bellargus* ab. ♀ *ceronus*, *P. escheri*, *Brenthis ino* (abundant), *Coenonympha iphis* (several ♂s, but only one ♀, all in fresh condition), *Erebia stygne*, *E. euryale*, *E. ligea*.

July 4th.—Albula Pass. We walked over the Albula Pass in pelting rain. On our way down some gleams of sunshine enabled us to make a few captures just above Ponte. These included *Hesperia carthami*, *Powellia sao*, *Brenthis ino* (very small), and *Erebia ceto*.

July 5th.—Pontresina. Heavy clouds nearly all day. We took a few blues, asleep on flower-heads, and amongst these was one *Aricia eumedon* ab. *fylgia* in fine condition. In this aberration the white streak on the underside of the hindwings is entirely absent.

July 7th.—Slopes of the Schafberg. Amongst our captures were *Polyommatus orbitulus*, *P. pheretes* (including ab. ♀ *caeruleopunctata*), *Scolitantides baton*, *Parnassius delius*, *Pieris callidice* (as usual a very active and strong flyer), *Melitaea cynthia* (several ♂s, but only one ♀), *M. aurinia* var. *merope* (plentiful), *Oeneis aëllo* (two ♂s), and *Erebia gorge* var. *triopes*. All these species were in fresh condition. Just above Pontresina we took also *Melitaea maturna* var. *wolfensbergeri*, in good condition.

July 9th.—Between the Bernina Hospice and Alp Grum. We took a freshly emerged *Erebia alecto* var. *glacialis* (the only specimen of this species that we met with at all this season), and several *E. gorge* var. *triopes*. We also found *E. gorge* (type). *E. lappona* was abundant, and we took a particularly fine specimen of ab. *caeca*, in which the black dots are entirely absent from the wings. We had not much sun after mid-day; but after the sun had gone in, we took a good many *Melitaea cynthia* and *M. aurinia* var. *merope* at rest and very lethargic. *M. cynthia* lay, with its wings expanded, on low bushes about a foot from the gronnd.

July 10th.—Roseg-Thal and Alp Surovel. Butterflies very abundant and varied in species. Our most interesting capture was *Melitaea maturna* var. *wolfensbergeri*, which was abundant; the ♀s were in good condition, but the ♂s were getting over. We also took *Lycaena alcon*, *L. arion* var. *obscura*, *Aricia eumedon* (particularly fine), *Polyommatus bellargus* ab. ♀ *ceronus*, *P. pheretes*, *P. optilete*, *Colias phicomone*, *C. palaeno* (fine and fresh), and *Melitaea parthenie* var *varia*.

July 11th.—On the slopes of the Schafberg. Sunshine at intervals only. We were fortunate in finding the right spot for *Erebia flavofasciata*, and took eleven ♂s and two ♀s, all in firstrate condition; the insect appeared just to have emerged, and the fringes of nearly all

our captures were intact. This insect is so local that there might appear to be some danger of its being exterminated. Fortunately, however, the hillsides over which it flies are so steep that the chase is a difficult one. We made a number of other captures, including *Lycaena alcon* (one ♂), *Polyommatus pheretes* ab. ♀ *caeruleopunctata*, *Oeneis aëllo* (two ♂s, one ♀), *Erebia mnestra*, and *E. gorge* (both type and var. *triopes*).

July 15*th*.—Suvretta-Thal (above Campfer). A fine day, following several days of cloud, rain, and snow. Most of our captures were made on the slopes down to the stream, quite near Campfer. We took a good series of *Erebia mnestra* ♂s, but only two ♀s. This insect was abundant and very fresh. *Parnassius delius* was also abundant and in fine condition; our series included one ab. *inornata* ♂, and one *alboprivata* ♂. We again took *Polyommatus pheretes* ♀, and, like the two we caught at Pontresina, it was ab. *caeruleopunctata*. Amongst our other captures were *Nomiades semiargus* ab. *caeca*, *Polyommatus orbitulus*, *P. optilete*, and *Plebeius argyrognomon* var. ♀ *brunnea*. *Coenonympha satyrion* var. *unicolor* was common here, as elsewhere in the Engadine.

July 16*th*.—Woods opposite Campfer. Our most interesting capture was *Brenthis pales* var. *arsilache*. In the swampy ground surrounding a little lake quite close to Campfer, the ♂s were abundant and very fresh. Apparently the ♀s were hardly out yet; we took only one specimen. Amongst our other captures were *Parnassius delius* ab. *alboprivata*, *Colias palaeno* ab. ♀ *herrichi* (very fine), *Melitaea maturna* var. *wolfensbergeri* (rather worn), *Oeneis aëllo* (one ♂ worn, and two ♀s), and *Erebia epiphron* var. *nelamus*. The two last named species were taken rather high up, above the Hahnensee.

July 17*th*.—Cavloccio-Thal (at the top of the Maloja Pass). We took a good series of *Erebia pharte*, the ♂s of which were abundant in swampy places; the ♀s appeared to be scarce. *Melitaea maturna* var. *wolfensbergeri* was fairly abundant; the ♂s were in very poor condition, but we took some good ♀s. Amongst our other captures were *Loweia dorilis* var. *brunnea*, *Lycaena euphemus* (two ♀s, smaller and less suffused with black than those we took at Weesen), *Polyommatus optilete*, and a very fine *Erebia tyndarus* ab. *caecodromus*. In this specimen the apical eyes were absent, their place being taken by minute white dots.

July 18*th*.—Mühlen (on the Julier Pass). There were a fair number of insects about, but there was not much variety, and nearly all that we took were worn and old.

July 19*th*.—In the Via Mala (near Thusis). We made a few captures, including *Polyommatus hylas*.

July 20*th*.—The Schyn Pass. *Erebia ligea* was very fresh and fine, as well as abundant; our series showed considerable variation in the number and size of eye-spots. *Polyommatus damon* was exceptionally large. In one place we met with a number of varieties of *Enodia hyperanthus*, including marked examples of ab. *arete* and ab. *caeca*, and we were rather surprised at finding *Limenitis camilla* and *L. sibylla* ♀s still in fair condition. Amongst our other captures was a magnificent specimen of *Argynnis adippe* ab. *virgata*.

July 23*rd*.—Neuhausen Forest. This would have been a better hunting-ground earlier in the season. *Apatura ilia* var. *clytie* was still flying, but in too poor condition to be worth catching. *Limenitis*

sibylla was also in poor condition, and so was *Pararge achine*. We again met with *Enodia hyperanthus* ab. *arete* and ab. *caeca*, and we succeeded in taking some very fair specimens of *Coenonympha arcania*. *C. iphis* was getting over.

We had a few brilliant days, but on a good many of the days on which we have reported captures there was sunshine only at intervals, and, on some days, the weather was hopelessly bad. On the whole, however, we did better entomologically than in any preceding year, and the majority of the specimens that we brought back were in perfect condition. We can strongly recommend Weesen, Alvaneu Bad, Pontresina, and Campfer as entomological centres. The only English entomologists whom we met were Mr. and Mrs. Travis, but we also made the acquaintance of a German entomologist, Professor Thieme, who visits Pontresina every year, and knows its entomological resources very thoroughly. He maintains that the specimens of *E. flavofasciata* met with at Pontresina are a local race, markedly distinct from the specimens found further east, and he has named them var. *thiemensis*.

VARIATION.

MELANIC AMPHIDASYS BETULARIA.—I observe in *The Entomologist's Record* for October 15th last, p. 250, a notice having reference to melanic specimens of *Amphidasys betularia*—"in the south and south-western counties it is still rare or absent." Again, on p. 251, it says—"Melanism may be affected by heavy rainfall and a damp climate, or the neighbourhood of large towns." During the winter of 1904-5, I obtained three pupæ of *Amphidasys betularia* close to Yorktown, Surrey. This place is close to the junction of Hants, Berks, and Surrey, and as far from any excessive smoke as one could wish for. The climate, too, is very dry. Yet of the three pupæ two came out perfect melanic specimens, quite black; the third was about normal, but well dusted with black spots. These three pupæ were obtained miles from each other. I had no time to breed *A. betularia* larvæ, but from the fact that two out of three pupæ found promiscuously were perfect melanic specimens, I can only surmise that black *betularia* are common in southwest Surrey.—B. TULLOCH (Capt.), Haddon House, Babbacombe Road, Torquay. *January 2nd*, 1907. [Data on melanism should be exact. We do not see how the pupæ were all taken "close to Yorktown," yet "miles from each other."—ED.]

ABERRATIONS OF LEUCANIA FAVICOLOR.—During the past year I obtained some beautiful specimens of an aberration of *Leucania favicolor*. These examples were of a very pale primrose-yellow, and appeared to be intermediate between ab. *lutea*, Tutt, which is deep primrose, and ab. *pallida*, Mathew, which is of a pale wainscot-brown without any trace of yellow. These specimens were bred last July from eggs laid by a female of ab. *lutea* the year before.—G. F. MATHEW, R.N., Dovercourt, Essex. *January 24th*, 1907.

NOTE ON FIDONIA CONSPICUATA AB. FUMATA.—In reference to Mr. G. F. Mathew's remarks on *Fidonia conspicuata* ab. *fumata*, I appear to have half-a-dozen specimens referable to that aberration. These were bred in the spring of 1888 and were of the first brood, being the offspring of parents which were bred in May, 1887. Some of the brood

emerged in August, 1887, and all these were unusually bright, the black dusting being almost absent, particularly on the forewings, and the black band standing out very clearly. These specimens are strikingly different from their brothers and sisters which emerged the following spring. Some of the latter show very little orange on the underwing, and the black border is so much suffused that it becomes practically absent. My original stock was quite normal.—A. W. Mera, 77, Capel Road, Forest Gate. *January 18th*, 1907.

NOTES ON COLLECTING, Etc.

Laphygma exigua larvæ taken at Sandown.—Although there have been plenty of records of the imago of *L. exigua* in this country in 1906, I have not noticed that anyone reports having met with the larva in a wild state. It is, therefore, worth recording that, on September 2nd, my friend, Mr. John Taylor, of Sandown, took a larva on seabeet (*Beta maritima*) on the shore near the town. Naturally, the identity of the species was quite unsuspected, until, on October 16th, the perfect insect was found out in the box in which it had been kept. I understand that no *L. exigua* were seen wild at Sandown after October 3rd.—Louis B. Prout, 246, Richmond Road, N.E. *January 21st*, 1907.

Hybernia defoliaria in January.—On the night of January 14th, 1907, a male of this species flew to light at my study window. On coming to set it out I was surprised to find that it was absolutely fresh. Hitherto, the few odd specimens I have taken early in the year have been worn, and I have always imagined them to haye been born in November, but, on referring to Barrett's *British Lepidoptera*, vii., p. 232, I find the following interesting remarks:—"On the wing usually in November and December, occasionally as early as October. Should there, however, be any continuance of severe frost in these months, emergence is deferred till January, or even February. This happened in 1864, and to a considerable extent in 1891, and in 1895 belated specimens were captured in March." What is the experience of your readers in this matter? I see from my diary that the last "New Year" specimen I took was on January 10th, 1902.—(Rev.) G. H. Raynor, Hazeleigh Rectory, Maldon. *January 18th*, 1907.

Decadence of Fidonia conspicuata in Essex.—I can quite bear out Mr. Mathew's remarks as to the disappearance of this insect in some of its most favoured spots. In August, 1884, I found it in great abundance, and, in September, 1886, the larvæ were plentiful. After that date I had no opportunity of visiting the spot for some years, but in May, 1898, I made a journey to the spot, and, for a whole day's work, I only succeeded in taking one specimen. I found the ground very much altered and nothing like what it was in the early eighties. My knowledge of the insect goes back to some ten or fifteen years before that time, for I remember going after the larvæ with the late Mr. Garrett, of Ipswich, which was probably about the year 1868. Then the broom was growing some six or eight feet high, and the place was used as a game preserve, with rides cut through the broom for shooting purposes; but, as my friend had been previously warned off by the keepers, our visit had to be short and hurried. Nevertheless, we managed to take our quarry, as, with every tap of the

broom, larvæ fell into the umbrella. This once favoured spot, I believe, was totally destroyed by fire.—A. W. Mera, 77, Capel Road, Forest Gate, E.

Query as to the hybernation of Pyrameis atalanta.—I see, in looking through your *British Butterflies*, p. 360, that you say that *Pyrameis atalanta* hybernates in hollow trees, etc. Do you know of any *authentic record* of this species hybernating? I feel certain myself that this insect does not survive the winter in this country in any stage, and is exactly the same as *Pyrameis cardui* in its habits and life-history (see *Ent. Record*, vii., pp. 110-111). The remarks on this subject (*op. cit.*, viii., pp. 4, 169, 270) may be referred to as supporting this view.—H. W. Head, Scarborough. *January 5th*, 1907. [We have no first-hand information such as is desired, and should be greatly obliged to our readers for any notes on the subject. —Ed.]

Parasitism of larvæ of Smerinthus ocellata, Amorpha populi, and Cerura vinula.—During the summer of last year I captured about fifty larvæ of *Smerinthus ocellata*, with others of *Amorpha populi* and other species. A peculiar fact regarding those of *Smerinthus ocellata* was that only four safely pupated, the others being ichneumoned. The ichneumons were of the small species which, as the larva approaches the fullfed state, works its way through the skin and there spins its cocoon, of a brown substance, and pupates therein. It appeared remarkable, however, that hardly any of the larvæ of *Amorpha populi* were affected by ichneumons, although many were captured at the same time and place as those of *Smerinthus ocellata*. I also took larvæ of *Cerura vinula*, and I noticed that, on the back of the head, were several small black specks (evidently eggs of some parasite), and, as the larvæ fed, these eggs hatched out small grubs, which fed on the body of the larvæ till it had cleared all the fleshy part away and left only the skin. Then they left it and began to eat one another, consequently I was not able to rear any of them to maturity.—John G. Hobbs, 31, Alexandra Road, Aldershot, Herts. *January 10th*, 1907. [Our contributor will find some interesting notes, by Professor E. B. Poulton, on the life-history of the parasite of *Cerura vinula* in the *Trans. Ent. Soc. Lond.*, 1887, pp. 303 *et seq.*—Ed.]

Early appearance of Pieris rapæ.—One of my daughters saw a white butterfly this morning flying about the slopes facing the sea. This is a remarkably early record. It has been a lovely bright warm day, with a gentle breeze from the southwest. The weather was very cold from December 21st until the 30th, when a thaw set in, and since then we have had it quite mild, and several days lately have been bright and warm.—Gervase F. Mathew, R.N., Dovercourt, Essex. *January 12th*, 1907.

Nænia typica and Plusia gamma as visitors to sugar.—It is curious what different experiences befall different individuals of our fraternity, and I think it is quite worth while for Mr. Colthrup to record his own, even though they only result in evidence of an opposite kind from other sources. Until I saw his note (*Ent. Rec.*, vol. xviii., p. 213) and Mr. Millward's (*suprà*, p. 23), I should have imagined that an entomologist—or at least a London entomologist—who had never seen *Naenia typica* at sugar was indeed a *rara avis in terra*; assuming, of course, that he resorted to sugaring at all at the right time of year, as Mr. Colthrup distinctly indicates. I have myself seen it quite freely at sugar in different localities, particularly at Hale End,

Walthamstow, where it is sometimes the only species that *will* come in any numbers at the beginning of July. As regards *Plusia gamma*, readers may remember a little discussion started by Mr. Colthrup a few years back (*Ent. Rec.*, xv., pp. 157, 188, 294; xvi., pp. 24, 48). I did not send any note on my experience, as Mr. Bankes and Mr. Tutt sufficiently showed that Mr. Colthrup's was here somewhat exceptional; but while I am writing I may say, from a really wide experience of sugaring at Sandown, in August and September, that *P. gamma* is a very capricious insect in this respect. In seasons when it is swarming every night about flowers (sugared or unsugared) it will often pay no attention at all to sugared fences, or only two or three stragglers will come; then, every now and again, there will come a "*gamma* night," or succession of nights, when it comes to the bait in positive abundance, as Mr. Tutt remarked.—Louis B. Prout. *January 17th*, 1907. [We may say that our experience with *Naenia typica* corresponds entirely with that of Mr. Prout. Some twenty years ago, sugaring on Greenwich marshes and in Westcombe Park, during early July, usually produced this species in abundance. It was not always common in Chattenden Roughs, but at Cuxton and at Deal was a very regular visitor at its proper time.—Ed.]

The feeding habits of Ægeria asiliformis (tabaniformis), etc.—Can any of the readers of the *Ent. Record* give me any hints as to the feeding habits of the larvæ of *Ægeria asiliformis* (*tabaniformis*)? Does it feed in the cut stumps like *Æ. culiciformis*, or low down near the roots like *Trochilium apiformis*, or under the bark like *Æ. scoliaeformis?* Newman says "at the roots," but Barrett, copying Hofmann, says "in the trunks, under the bark." Then again, as to *Æ. andreniformis*, Mr. Rothschild, in the *Ent. Mo. Mag.*, records finding the larva "mining the stem of *Viburnum lantana*," but, at the meeting of The Entomological Society of London, on November 7th, Mr. Rothschild is reported as having exhibited "branches of *V. lantana* showing the mines of *Æ. andreniformis*." Will Mr. Rothschild or anyone who was present at the meeting, kindly explain accurately where and how the larvæ had fed? Now that the foodplant has been discovered, many collectors, I am sure, would like to search for the insect in their localities, to ascertain its range, etc., in England, and any information would be most acceptable.—Percy C. Reid, Feering Bury, Kelvedon. *January 6th*, 1907. [A detailed account of the feeding-habits of the larva of *Ægeria* (*Trochilium*) *andrenaeformis*, at Ashton Wold, Northants, Tring, in Herts, Surrey, and in Kent, together with photographs of affected stems, etc., has just been published in the *Trans. Ent. Soc. London*, 1906, pp. 471-3. A detailed description of the larva by Mr. E. R. Bankes, and one of the pupa by Dr. T. A. Chapman are also given.—Ed.]

CURRENT NOTES.

We find it quite impossible to answer all the letters addressed to us individually about *The Natural History of the British Butterflies*, vol. i. We may state, as general information, that (1) covers can be supplied for the same at 1s. 6d. each, to match the series *The Natural History of British Lepidoptera*; (2) the cases can be lettered "British Butterflies," vol. i, or "British Lepidoptera," vol. viii; (3) bound

copies can be supplied at 1 guinea net. Only those orders for cases can be attended to that are sent in *at once*, as they will be ordered specially for subscribers.

In answer to a large number of other enquiries, we are prepared to issue the volume as vol. viii of *The Natural History of British Lepidoptera*, as one of the regular series of that work, to those subscribers (*and those only*) whose names are *on our own private subscription list* for the latter work, at the usual subscription price for each volume of this work. The volume is published to the trade at purely net prices. The volume is called vol. viii because, circumstances permitting, it is intended later to publish (1) the completion of "The Alucitides" as vol vi, and (2) an account of the more generalised superfamilies of the Hepialo-Papilionid stirps as vol. vii. This will lead up naturally to the butterflies on that stirps.

We have received from Mr. C. Head some samples of excellent lantern-slides, relating to Protective Resemblance. To those lecturing on the subject they will prove most valuable; we have already put them to the test of practical experience in this direction.

Eggs of *Thecla pruni* are very badly wanted for our new volume of *British Butterflies*. Bad luck at hatching time last year lost us all chance of getting a complete account of the early larval stages. Can anyone help?

The South London Entomological and Natural History Society has selected the following Officers and Council for 1907, *viz.*—*President:* R. Adkin, F.E.S. *Vice-presidents:* W. J. Kaye, F.E.S.; H. Main, B.Sc., F.E.S. *Treasurer:* T. W. Hall, F.E.S. *Librarian:* A. W. Dods. *Curator:* W. West (Greenwich). *Hon. Secretaries:* Stanley Edwards, F.L.S., &c. (Corresponding), H. J. Turner, F.E.S. (Report). *Council:* F. B. Carr; T. A. Chapman, M.D., F.Z.S., F.E.S.; A. Harrison, F.L.S., F.Z.S., F.E.S., &c.; A. L. Rayward; A. Sich, F.E.S.; R. South, F.E.S.; E. Step, F.L.S.

The Entomological Society of London has nominated the following as members of Council and Officers for the session, 1907-8. *President:* Charles Owen Waterhouse, F.E.S. *Treasurer:* Albert Hugh Jones, F.E.S. *Secretaries:* Henry Rowland-Brown, M.A.; Commander James J. Walker, M.A., R.N., F.L.S. *Librarian:* George C. Champion, F.Z.S. *Council:* Gilbert John Arrow, F.E.S.; Arthur John Chitty, M.A.; Dr. Thomas Algernon Chapman, M.D., F.Z.S.; William James Kaye, F.L.S.; Dr. George Blundell Longstaff, M.D.; Professor Raphael Meldola, F.R.S., F.C.S.; Frederic Merrifield, F.E.S.; Guy A. K. Marshall, F.E.S.; Louis Beethoven Prout, F.E.S.; Edward Saunders, F.R.S., F.L.S.; Robert Shelford, M.A., F.L.S., C.M.Z.S.; George Henry Verrall, F.E.S.

Another of the successful series of meetings of the Entomological Club was held in the Entomological Salon of the Holborn Restaurant on January 22nd, when Mr. G. H. Verrall was the host. A preliminary informal reception and meeting took place between 6 p.m. and 8.30 p.m., supper being served at the latter hour. A large number of well-known entomologists were invited, but, owing to several causes, a few of the regular visitors were unavoidably prevented from attending. The company, however, fell little short of a hundred, but that "little" was evidently a matter of regret to the genial host, who had evidently set his heart on a record meeting. Among the members and friends

observed to be present were—Prof. Meldola, **Prof. Poulton,** Rev. E. A. Eaton, Rev. F. Morice, Rev. F. Thornewill, Drs. T. A. Chapman, Dixey, Joy, Lieut.-Col. Bingham, Colonel Yerbury, Paymaster-in-Chief G. F. Mathew, Commander Walker, Messrs. Adams, **R. Adkin,** Andrews, Bliss, F. Bouskell, Cant, J. Carpenter, Carr, G. C. Champion, **A. J. Chitty,** F. Noad Clark, J. E. Collin, W. Distant, **H. St. J. K. Donisthorpe,** Hamilton Druce, S. Edwards, Enoch, Fenn, W. H. B. Fletcher, Frohawk, Godman, **T. W. Hall,** A. Harrison, F. J. Hanbury, Heron, Jacoby senr., Jacoby junr., Janson, Jennings, A. H. Jones, Keys, W. F. Kirby, Lloyd, Lucas, Main, Martineau (2), F. Merrifield, Morley, B. G. Nevinson, W. Nicholson, **G. T. Porritt,** W. Sharp, Shelford, A. Sich, Skinner, Smith, South, Step, H. J. Turner, J. W. Tutt, J. H. Tutt, C. O. Waterhouse, E. A. Waterhouse, F. H. Waterhouse, W. West, etc. After supper the host proposed "The King," reminding the visitors of the fact that this was the anniversary of the King's accession. In further moving the toast of "The Entomological Club," Mr. Verrall briefly noted that this was the 31st occasion on which it had been his privilege and pleasure to meet them. He pointed out that there was some misconception as to the membership of the club which, limited to eight full members, had, however, power to elect a limited number of suitable honorary members, who should be ready to fill the place of any vacancy which might occur in the roll of full members, and that there was now room for the election of a few hon. members "of the right sort." He had, he said, recently seen the old Entomological Club cabinet and the curator, Mr. Lowne, and he reported that the collection seemed to be in good order, and that Mr. Lowne, after being custodian so long, desired still to retain the care of the cabinet during his lifetime. Mr. Verrall pointed out that he himself had borrowed some of the diptera, and that there were many very important and useful insects still contained in it. At the close of a very happy speech, Mr. F. du Cane Godman briefly proposed "Our Host—Mr. Verrall," to which the latter humorously replied. A few splendid selections on the violin by Mr. Jacoby, accompanied by his son on the piano, were very much appreciated. Those who had long distances to traval began to leave soon after 10 p.m., but a large contingent of those living or staying in town, enjoyed themselves till well towards midnight.

At the meeting of the Lancashire and Cheshire Entomological Society, held on January 21st, a paper was read by Mr. F. N. Pierce, F.E.S., entitled "Notes on the structure of *Malacosoma* hybr. *schaufussi* (*M. castrensis* × *M. neustria*)." The paper was admirably illustrated by microscopic preparations of the insects named, as well as of *M. franconica*, shown upon the screen by the aid of the micro-lantern. The author pointed out that, unlike the usual mixture of male and female genitalia obtaining in the case of hybrids, the sexes of *schaufussi* possessed unmixed organs proper to the respective sexes. From a consideration of the details of the structure of the hybrid moths, they are seen to combine the distinguishing features of each of the parent species, though perhaps leaning more toward *neustria*. The scales also showed modification, being intermediate in form and size between those of the parents from the same part of the wing. [For details of this hybrid, and the allied hybrids *caradjae* and *penzigi*, see *The Natural History of British Lepidoptera*, ii., pp. 524-526.]

At the same meeting, the Rev. T. B. Eddrupp exhibited melanic *Agrotis agathina* from the West Riding of Yorkshire, whilst Mr. Mansbridge also showed melanic specimens of the same species from Delamere, for comparison with those exhibited by Mr. Eddrupp; they were seen to be more smoky in ground colour than the West Riding specimens, appearing quite dull beside them.

At the Annual meeting of the Entomological Society of London, held on January 23rd, the retiring president, Mr. F. Merrifield, delivered an interesting address, in which he discussed some of the causes of the persistent abundance or scarcity, generally or locally, of species and varieties of insects, and the relative importance of the consumption of their food and the attacks of their enemies. Reference was made to striking characters that seemed of no biological importance, to habits and activities not directly concerned with nutrition or reproduction, and the manner in which they are affected by external conditions, and to structure and fixed habits indicating their ancestral history, and affecting their present capabilities.

Can any reader refer us to any record relating to the habits of the young larvæ of *Melitaea athalia?* Is there any evidence bearing out the statement that they are gregarious when young, as noted by Mr. South?

A most suggestive paper by Dr. T. A. Chapman, on "Progressive Melanism," as exhibited in *Hastula hyerana*, is appearing in the *Ent. Mo. Mag.*

Mr. Luff, in the same magazine, makes a long series of additions to the Hymenoptera-Aculeata occurring in Guernsey. Of these *Diodonotus friesei*, Kohl., *Coelioxys afra*, Lep., appear to be the most interesting. Mr. E. Saunders points out the peculiar fact that whilst *Coelioxys afra* is associated with *Megachile argentata* in Guernsey, *Coelioxys brevis* is associated with it in Jersey.

Mr. E. Saunders adds *Halticus brevicornis*, Schrank, to the British fauna, from specimens found between Southbourne and Hengistbury Head, in July, 1906, and at Eastbourne, August, 1906.

The Hon. N. C. Rothschild describes *Typhlopsylla isacanthus*, a flea new to the British fauna, from a ♀ taken on *Hypudaeus glareolus*, at Lyndhurst, in December, 1906.

SOCIETIES.

City of London Entomological Society.—*January 1st*, 1907.—Pocket box exhibition.—Dwarf lepidoptera.—Abnormally small specimens, including *Agrotis puta*, *A. saucia*, *Plusia gamma*, *P. chrysitis*, and *Mamestra brassicae*, taken at sugar in September, 1906, which the exhibitor attributed to the exceptionally dry and hot season, Rev. C. R. N. Burrows. Polia chi.—From moor near Whitby, in August. The species was abundant on the dark stone walls common in this district, but no dark specimens were seen, Mr. S. J. Bell. Acronycta menyanthidis.—Very dark specimens from York, Mr. H. M. Edlesten. Brenthis selene.—From Ashdown Forest, including a ♂ with confluent marginal spots, and a ♀ much suffused with black spots, Mr. T. H. L. Grosvenor. Polyommatus corydon, P. bellargus, P. icarus (alexis), and Plebeius ægon.—Long series arranged to demonstrate parallel variation in these species, Dr. G. G. S. Hodgson. Thyatira

BATIS.—Two specimens, one from Epping, with intensified pink coloration, the other from the New Forest, with this colour entirely lacking, the latter respresenting the rare Linnean type, Mr. L. A. E. Sabine. ÆGERIA CHRYSIDIFORMIS, from Folkestone; APORIA CRATÆGI, from East Kent, July 10th, 1906, and LYTTA VESICATORIA, which was found in abundance near Dover, at the same date, Mr. V. E. Shaw. *January 15th.*—EXHIBITS.—TÆNIOCAMPA PULVERULENTA (CRUDA) var. HAGGERTI, Tutt, Mr. J. A. Clark. THERA VARIATA, with interrupted central fascia, from Rannoch. PHRAGMATOBIA FULIGINOSA var. BOREALIS, from the same locality, Mr. E. A. Cockayne. HEMEROPHILA ABRUPTARIA.—Melanic examples from Clapton; NONAGRIA GEMINIPUNCTA, from Enfield; N. TYPHÆ and N. CANNÆ, from the Norfolk Broads, Mr. H. Edlesten. ARICIA AGESTIS ab. ORNATA, from Surrey, with var. ALPINA? and var. OBSOLETA, from Aberdeen, Mr. T. H. L. Grosvenor. MELANIC SPECIMENS of about twenty species, including CYMATOPHORA DUPLARIS and ACRONICTA LEPORINA, from Cornwall and Lancashire; PHARETRA RUMICIS, from Westmorland and Barnsley; and APLECTA NEBULOSA, from Cornwall, Epping, and Delamere, Mr. A. Harrison. MELANIC SPECIMENS of many species including STAUROPUS FAGI, BOARMIA CONSORTARIA, ODONTOPERA BIDENTATA, and BOARMIA ABIETARIA, to illustrate a paper on melanism, Mr. L. W. Newman. PHRAGMATOBIA FULIGINOSA, from Rannoch, including a specimen with black abdomen and hind-wings, Mr. L. A. E. Sabine. LYMANTRIA MONACHA.—Two melanic and one intermediate specimen bred from dark Hull ♀, and HYLOICUS PINASTRI, bred from Arlington, Suffolk, Mr. H. B. Whitehouse. [The question of melanic *L. monacha*, from Hull, is an interesting one to Yorkshire lepidopterists (see *Ent. Rec.*, iii., pp. 257 *et seq.*—ED.]

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*December 13th* 1906.—EXHIBITS.—ANTICLEA RUBIDATA.—A series from Cornwall and Devonshire. The former less red and generally greyer than usual, also a bred series of CHESIAS SPARTIATA, Messrs. Harrison and Main. LIMENITIS SIBYLLA, from Arundel, Mr. Garrett. BITHYS (THECLA) QUERCÛS.—Ova *in situ* below the winter buds of oak, from Ranmore common, Messrs. Rayward and Tonge. TINEA PALLESCENTELLA, with GELECHIA PINGUINELLA and BORKHAUSENIA PSEUDOSPRETELLA for comparison, Mr. A. Sich. LAPHYGMA EXIGUA.—A long series of bred specimens, with captured specimens for comparison, also a living specimen of STAUROPUS FAGI for comparison, which emerged on December 9th, Mr. Newman. PIERIS BRASSICÆ.—With the discal spot connected with the apical patch, also a bred series of MELITÆA ATHALIA, and a series of PLUSIA MONETA, bred from larvæ found in his own garden at Leatherhead, Mr. Carpenter. *January 10th*, 1907.—EXHIBITS.—CIDARIA MIATA.—Showing much variation in tone and mottling, bred from New Forest ova, Messrs. Harrison and Main. NOTODONTA CHAONIA.—A large number of bred specimens to exhibit the range of variation in colour and markings, Mr. Newman. EPINEPHELE IANIRA.—With the usual tawny markings straw-coloured and somewhat extended, Mr. R. Adkin. CŒNONYMPHA PAMPHILUS, from Chipstead, with pale patches on all four wings, and a series of AGLAIS URTICÆ, showing restricted blue lunules in specimens from Engleberg and Lapland, Mr. H. J. Turner.

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MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W., 8 p.m. Meetings—March 6th, 20th; April 10th.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m., except in July and August. (No dates received.)

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. March 4th, "Britiish Butterflies and Moths from Life," Hugh Main, B.Sc. Field Excursions:—February 17th, Hayes and Keston (9.51 a.m., Ludgate Hill); March 17th, Coulsdon (10.25 a.m., Cannon Street).

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m.; February 14th, "Our Authorities, an introduction to entomological literature," by H. J. Turner. February 28th, Exhibition Lantern Slides.

North London Natural History Society, The Amherst Club, Amhurst Road, N. (No notices.)

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec., H. R. Sweeting, 6, The Elms, Dingle, Liverpool.

Birmingham Entomological Society, Norwich Union Chambers, Congreve Street, On the fourth Thursday in January, at 7 p.m. February 18th, Annual Meeting, **at 7 p.m.**

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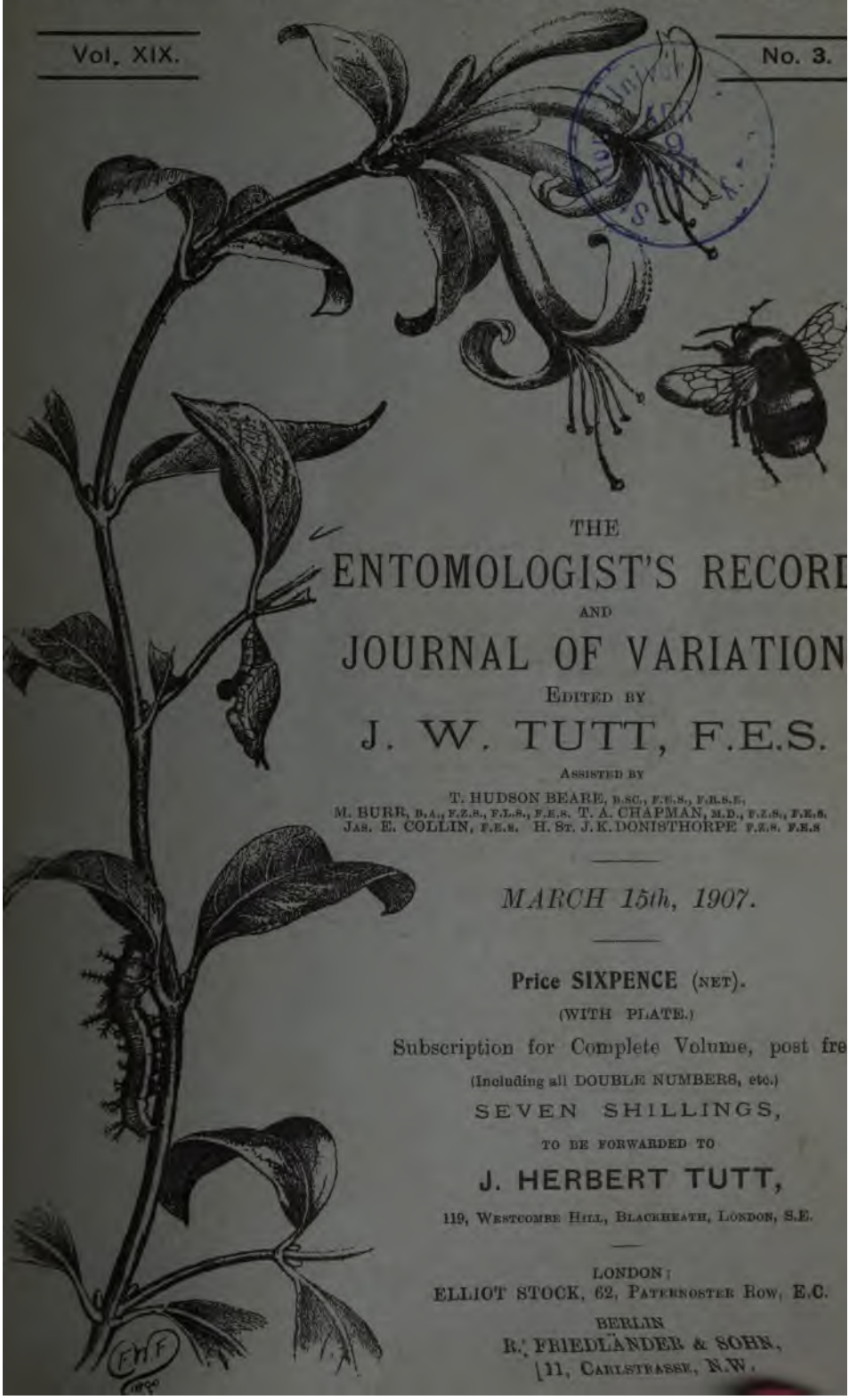
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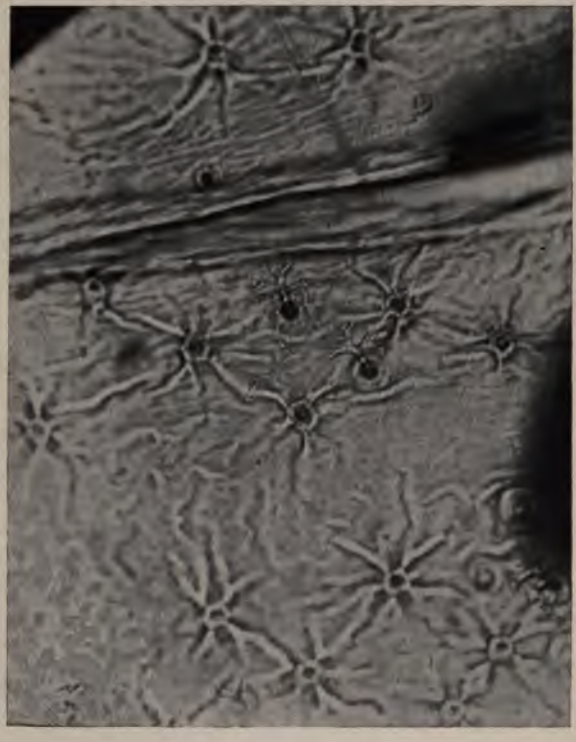


Photo F. N. Clark.

Pupal skin and hairs of Loweia (Chrysophanus) amphidamas × 200.

The Entom. Record, etc., 1907.

Notes on the genus Agdistis, Hb., with description of a new species (Agdistis sphinx, Wlsm.).

By the Right Hon. Lord WALSINGHAM, M.A., LL.D., F.R.S.

The genus *Agdistis*, Hb., includes about seventeen species, for the most part almost impossible to identify from published descriptions, and always extremely difficult to separate, especially when represented by poor specimens, or by merely a few examples. The form and pattern is remarkably similar in all, and, with only two exceptions, the general colouring of the forewings is practically the same. The two, which may be at once recognised by their distinctly darker tint, are *Agdistis adactyla*, Hb., and *A. satanas*, Mill. The Zeller Collection contains thirteen specimens of *adactyla*, and I have others, but am personally unacquainted with the larva, which feeds on *Artemisia campestris*, and in *Ann. Soc. Ent. Fr.*, i., 250 (1832), it is said to occur on *Chenopodium fruticosum*. Of *A. satanas* I have a small series of twelve, sent me by the late M. Millière, who swept larvæ, some of which I also possess, from mixed herbage at Cannes, ultimately determining the foodplant as *Scabiosa candicans*. Eppelsheim, who recorded this insect for the first time from Germany, found two larvæ on *Scleranthus*, sp., which did not agree with those of *adactyla*, and which he thought belonged to *satanas*, because found on the spot where he had taken it. In this connection it may be mentioned that Bruand, in 1858, had described his *A. delphinensella*, as being darker than any figure published by Herrich-Schäffer. The figure of *adactyla*, in Herrich-Schäffer's *Schm. Eur.* (pl. vii., 47), is certainly too pale to represent our present idea of that species. Rebel suggests that *satanas* and *delphinensella* may possibly be identical, but it seems at least equally probable that the latter is truly the more widely distributed *adactyla*, Hb., and it would certainly be still unsafe to sink Millière's name in its favour. *A. satanas* is smaller, and usually darker than *adactyla*, the larvæ is one of those with raised thoracic tubercles, and has rather strong bristles on the small tuberculated dorsal spots.

Millière also described two species, *A. staticis* and *A. lerinsis*, as feeding on "*Statice cordata*" (a name not mentioned in Bonnier and de Layen's *Flore de la France*). He assured me that *staticis* was to be found always about a month earlier than *lerinsis*, although on the same plants and in the same locality. He sent me larvæ and living specimens of both, in glass tubes, by post, but, so far as the imagines were concerned, I was never able to distinguish them satisfactorily, and, after carefully labelling bred specimens, I always suspected some confusion among the pupæ and perfect insects received from him. It was of course impossible to deny that the larvæ were absolutely distinct; of these, *lerinsis*, properly emended to *lerinensis* by Rebel (*Cat. Lep. Pal.*, ii., 77, no. 1422), is tuberculated as in *frankeniae*, Z., while *staticis* is smooth as in *bennetii*, Curt., with which it might easily be confused. *A. bennetii* is one of the few lepidoptera which can so far claim to be exclusively British, and it was with no small surprise that, in 1903, I found larvæ, apparently undistinguishable from those of this species, on its foodplant *Statice limonium*, at Hammam-es-Salahin, in Algeria, from which I bred a single specimen (88813), certainly paler than our *bennetii*, but otherwise somewhat similar. When again at Biskra last

March 15th, 1907.

winter, I searched diligently for more of these larvæ, and succeeded in finding them not uncommonly in three separate localities—Ain-Oumash, Hammam-es-Salahin, and Oued-Biskra near the town itself. In this latter place, with it, were some tuberculated larvæ which were at once recognised as Millière's *lerinensis*. My first impression was that here was a most abnormal instance of a dimorphic larva, but this has been amply dispelled by breeding a series of both species rather larger than the Cannes specimens, and perfectly distinguishable from each other. After careful comparison it is now evident that, in the Sahara, we find, not the English *bennetii*, but Millière's two species *staticis* and *lerinensis*, feeding side by side on the same plant and at the same time; a remarkable confirmation of their first published discovery on the Îles Lerins, near Cannes.

In addition to these there are found at Biskra three other species, *A. tamaricis*, Z., *A. frankeniae*, Z., abundant, and a fine new species on *Limoniastrum guyonianum* which I propose to call *Agdistis sphinx*, from the curious resemblance of the larva to a young larva of one of the *Sphingidae*, the protruding tubercle above the head having exactly the appearance of an anal horn, while the attenuation of the body posteriorly represents the form of a Sphingid larva in the reverse position. I confess to having been entirely deceived by this appearance in the first specimen taken at Biskra in 1903.

The new species may be described as follows :—

1427: 1. Agdistis sphinx, sp. n.

Antennae less than one-half; pale, slaty cinereous. *Palpi* short, rather roughly clothed, suberect, projecting but little beyond the frontal tuft; pale, slaty cinereous, with a few blackish scales. *Head* and *Thorax* pale, slaty cinereous. *Forewings* narrow, elongate, widening outward; pale, slatycinereous, sparsely sprinkled with blackish scales, except upon the paler triangular space, representing the longitudinal fold, which is conspicuous; on the outer third of the costa are four elongate, blackish, spots, in two pairs, the space between them paler than the ground-colour of the wing; at the inverted apex of the pale triangular space is a strong blackish spot, followed along the lower edge of the same space by two smaller ones, the first elongate, the second shorter, and placed about half-way between the apex and the base of the pale triangle; at the tornus is also a blackish spot, reaching more faintly through the cilia, with two others on the lower half of the termen; cilia pale, inclining to ochreous, their outer half slightly greyer than their base. Exp. al. 29-35mm. *Hindwings* rather shining, pale greyish cinereous, the veins slightly darkened, with a slight greyish fuscous marginal shade above, at, and beyond, the flexus; cilia as in the forewings, but paler towards the apex. *Abdomen* greyish cinereous. *Legs* pale, slaty cinereous. Type ♀ (97326); ♂ (97327); ⊕ (97328-31); Mus. Wlsm.

Hab: Algeria—constantine—Ain-Oumash, Hammam-es-Salahin, Oued-Biskra. Larva *Limoniastrum guyonianum*, II.-III.; 8-9, V. 1894 (Eaton); 30. III.-2. IV. 1903; 9-30. IV. (excl. 10-16. IV.), 1904; excl. 10. IV.-11. V. 1906 (Wlsm.). Twenty-seven specimens.

Larva variable in colour, usually pale glaucous green (similar to the leaves of the foodplant which it further resembles by the presence of minute paler pimples over the whole surface); prothorax with a short, raised, truncate, tubercular projection, covering the head when at rest; metathorax with a longer and more pointed projection directed obliquely forward and pimpled on its surface; a whitish spiracular line runs from behind the prothorax to the anal segment, and the anterior segments are stouter than the posterior, to which the size of the body gradually tapers. *Long.* 19mm. Some specimens are reddish grey throughout and intermediate tints are to be found.

The larva feeds exposed on the leaves of *Limoniastrum guyonianum* in February and March, and the perfect insects are to be found from the beginning of April to the end of May. It is common at and in the neighbourhood of Biskra.

Its nearest ally is probably *Agdistis paralia*, Z., which I have taken

near Cadiz, where larvæ, unfortunately not reared, but almost certainly belonging to it, occurred on *Limoniastrum monopetalum* in salt-marshes. It is a rather dark species, somewhat resembling *adactyla*, Hb., but larger, and surely the *manicata* of Staudinger, associated in the original description with the above-mentioned plant, but erroneously regarded by Rebel (Stgr.-Rbl., *Cat.*, ii., 77, no. 1424) as "*adactyla*, Hb. 32-34; . . . . ? *manicata*, Stgr."

Dr. Rebel is also mistaken (Stgr.-Rbl., *Cat.*, ii., 77, no. 1422) in making *A. lerinensis*, Mill., a synonym of *heydenii*, Z. I have bred the latter from larvæ found commonly on *Atriplex halimus*, and less often on *Asparagus*, at Cannes, and Millière gave *Euphorbia spinosa* as another of its foodplants. This is certainly more nearly allied to *frankeniae*, Z., than to *lerinensis*, Mill., whereas the latter approaches exceedingly near to *meridionalis*, Z. I have met with *meridionalis* in Corsica, but far from *Tamarix*, with which shrub Zeller was inclined to associate it.

Our knowledge of *A. sanctaehelenae*, E. Wlstn., *canariensis*, Rbl., *pustulalis*, Wkr., *ingens*, Chr., *minima*, Wlsm., and *nanodes*, Meyr., is at present too elementary to admit of bringing these species into useful comparison with their European congeners, but I have at least one undoubted specimen of *tamaricis*, Z., from the Cape-de-Verdes Islands, and others from Cape Colony, which cannot be distinguished from it; while further specimens in poor condition come from Arabia, Karachi (N.W. India), and from Accra and Bathurst (W. Africa).

The Pupal skin and hairs of Loweia (Chrysophanus) amphidamas (*with plate*).

By Dr. T. A. CHAPMAN.

This pretty little pupa very much resembles that of *Hamearis* (*Nemeobius*) *lucina* in its pale colour, studded with black spots in the positions characteristic of so many Lycænid pupæ. Its fine sculpturing is also interesting. The appendages have only waved lines, not unlike those of the rest of the surface. Everywhere else, however, these waved lines are dependences of points, similar to those on other Chrysophanids. They have a central small point, never by any chance developed into a hair, a larger centre, with some trace of radiate structure, and a larger outside circle; from these, waved ridges proceed in four or five directions, often further dividing; they are often continuous from one point to another, but often, and over some regions always, fail to meet, but lose themselves on the general surface by fading out. The trumpet-hairs arise from bases like ordinary hairs, always independently of the ordinary points and ridges. They are of unusual form; they have a stem, but, instead of a more or less disc-like top, they divide and subdivide into branches, sometimes dichotomously, more often irregularly, the final branches ending in groups of spicules. They look like portions of some lichen, or coral, or deer's horn. They are only 0·04mm. high and across, and are very transparent, so that the figure shown from the photograph, though successful, gives a less satisfactory idea of their appearance than one might wish. Round the spiracles are numerous "lenticles," in size and general appearance very like the general surface-points and the hair-bases, but distinguishable at once by the membrane filling the lumen being studded with fine dots.

The Identity of the British Nonagria neurica (*with plate*).

By H. M. EDELSTEN, F.E.S.

(*Concluded from* p. 37.)

Knaggs mentions (*Ent. Ann.*, 1865, p. 99) that Doubleday did not recognise the name *arundineta* bestowed on the insect which had hitherto gone in our cabinets by the name of *neurica*, he also refers to Schmidt and Staudinger.

In 1869, Staudinger confirms *N. neurica*, Hb., as a separate species and makes *N. dissoluta*, Tr., the type, *hessii*, Bdv., a synonym, and *arundineta*, Sch., a variety. Staudinger writes (*Stett. Ent. Ztg.*, xxx., p. 88): "*Nonagria neurica*, Hb., *dissoluta*, Tr., *arundineta*, Schmidt.—In Ochsenheimer's collection there is a genuine *neurica*, Hb., fig. 381, designated as such by a label written with his own hand. Underneath a typical *arundineta*, Schmidt, is placed, and provided with a label, on which is the following, written in Ochsenheimer's handwriting: 'An eadem cum præcedente? sub nomine *Noctua dissoluta*.' In Treitschke's collection there are, under the label *neurica*, five specimens, the first of which is a *neurica*, Hb., 381, the second, third and fourth are *arundineta*, Schmidt, and the fifth is the dark variety of *neurica*, Hb., figs. 650-661, subsequently, *hessii*, Boisd. It appears in the most striking manner from this, as well as from what Treitschke says about *neurica* (*Die Schmett.*, ii., p. 319), that Treitschke united all the three varieties, while Ochsenheimer had already correctly surmised the latter to be another species, *viz.*, *arundineta* (so well characterised by my friend Schmidt, of Wismar, in the *Stett. Ent. Ztg.*, 1858, pp. 369 *et seq.*). The name *dissoluta*, however, must only remain for the dark variety of *arundineta* (as that is certainly only what it is), for Hübner's figs. 659-661, and for *hessii*, Boisd., as Treitschke, when giving this name (p. 319), only means the dark variety. Now, to proceed consistently, the name *dissoluta*, Tr., must remain as the typical name for the sake of priority, and *arundineta*, Schmidt, must be added as a variety; although this black *dissoluta*, Tr., is now exceedingly rare, and has not been found since the death of old Hess. I do not know whether, and in what condition, the light variety of *arundineta* is found near Darmstadt; Schmidt never found the dark variety near Wismar."

Newman describes (*Brit. Moths*, p. 271, fig. 458) *arundineta*, and figures *arundineta* and *dissoluta*, gives Treitschke's description of the larva, and says this insect is the *N. neurica* of Doubleday's list, and goes on to say "the lower figure represents the variety *dissoluta* of Treitschke; this is the *neurica* of Hübner, figs. 659-661, and the *hessii* of Boisduval. The upper figure is the *neurica* of Treitschke."

In 1888-9, Tutt says (*Ent. Mo. Mag.*, xxv., pp. 56-7) the synonymy should be:—

Nonagria neurica, Hb., Sta.
(*a*) var. *dissoluta*, Tr.
(*b*) var. *arundineta*, Schmidt.

In 1891, the same writer, in his *British Noctuae*, i., p. 49, calls the species *neurica*, says two of his specimens, which came from Mr. Warren, from Cambridge, agree exactly with *neurica*, Hb., also says most of our specimens = *arundineta*, Schmidt; he also describes *dissoluta* as a var. of *neurica*. In the same work (iv., p. 101) he criticises Schmidt and Staudinger again, says we get *neurica*, Hb., also

arundineta, Schmidt, but no longer get *dissoluta*; shortly, he makes *neurica*, Hb., the type, with *dissoluta* and *arundineta* as vars.

Buckler, under *neurica*, describes and figures (*Larvae, &c.*, iv., pt. 1, pp. 40-41, and pl. lxi) the larva of *arundineta*.

In 1895, Meyrick calls (*Handbook*, etc., p. 110) the species *dissoluta*, Tr., and gives *arundineta*, Schmidt, and *neurica*, Dup., as synonyms.

In 1899, Barrett calls (*Brit. Lep.*, v., p. 90, pl. 196, fig. 1, 1*a*, 1*b*, and larva 1*c*) the species *neurica*, and describes *arundineta*, giving British localities, and then says: "Abroad it is found in many parts of northern, central, and western Germany, and probably in suitable places in Holland, Switzerland, and Russia, but this is not very clear, since there seems to be a probability that its localities are sometimes confused with those of *N. arundineta*, Schmidt, and *dissoluta*, Tr." Then, after giving Buckler's description of the larva, he says: "It is of importance to note this (the description), as the description by Wilde, quoted by Dr. Hofmann, does not agree very closely." Nor does it, as Wilde was describing the larva of *neurica*, and Buckler larvæ of *arundineta*; but, if Barrett had referred to Wilde he would no doubt have called the insect he was describing var. *arundineta*.

In 1901, Staudinger and Rebel (*Catalog*, 3rd ed., no. 1896), make *neurica*, a species, describe it as "species gracilior, subtus immaculata," and give Britain as a locality. In no. 1897, they make *dissoluta* a species, describe it as "alis anticis obscurus: ab.," and give Germany only as its locality. While in no. 1897A, they make *arundineta* a var. of *dissoluta*, describe it as "alis anticis pallidis, stramineo griseis," giving Britain as a locality among others. There is no doubt that Staudinger and Rebel are right except for their British references. Their synonymy reads :—

Neurica, Hb., 381; Schmidt, "Stett. Ent. Ztg.," 1858, p. 367; ? Tr., v., 2, p. 319 (*pro parte*); Tutt, "Brit. Noct.," i., 49; Barr., "Brit. Lep.," v., t. 196, fig. 1 (species gracilior, subtus immaculata). Germany s. et c. oc., Angl., Sweden, ? Austria, Transsylvania.

Dissoluta, Tr., v., 2, 319 (1825); Gn., i., 106; Stgr., "Stett. Ent. Ztg.," 1869, 88. *Neurica*, Hb., 659-61 (non 381). *Hessii*, Bdv., "Gen.," p. 134 (1840) (alis anticis obscuris: ab.). • Germany m. oc. (olim.).

var. *arundineta*, Schmidt, "Stett. Ent. Zeit.," 1858, 369; Knaggs, "Ent. Ann.," 1865, p. 99; *neurica*, Dup., vii., 106, 2; H.-S., 347-8; Gn., i., 106; Tr., v., 2, 319 (*pro parte*) (alis anticis pallidis, stramineo griseis). Germany s. et m. oc., Helv. Holland, England, Denmark, Russia m. or., Persia, Transcaspia.

Now we see from all this that *neurica*, Hb., is one species, and *dissoluta* and its var. *arundineta* another, and then comes the important question—Do we get *neurica*, Hb., in Britain? Mr. Tutt said we did, but I cannot help thinking that he was unable to get true *N. neurica*, Hb., from the continent to compare with his Cambridge specimens, or he would not have said that Hübner's fig. 381 = our insect. Then again the larva of the insect we get in England from Cambridgeshire, Norfolk, Kent, etc., is of the dirty white colour, with a reddish tinge on the back, as described by Wilde and Buckler, and does not agree with Wilde's description of the larva of *neurica*, which is of dull bluish-grey, and has three stripes on the back; and the pupa of our insect agrees with Wilde's figure of *arundineta*. So the answer, in my opinion, is that we do not get *N. neurica*, Hb., in Britain at all, but only *N. dissoluta*, Tr., and its variety *arundineta*, Schmidt. Now as regards the synonymy of our insect it should, in my opinion, read :—

Nonagria, Ochs.
dissoluta, Tr., Gn., Stgr.(=*neurica*, Hb., 659-61 (*nec* 381); =*hessii*, Bdv.).
var. *arundineta*, Schmidt.

which means that we must make the black form the type, and *arundineta* a variety. This is one of those curious instances in which the type is rarer than the variety.

I should like now to make a few remarks on the life-history of *arundineta*. I find that the only stage in which this insect has not been described is the egg-stage. *Egg*.—The eggs that are photographed (pl. ii., figs. 11-12) were laid between August 9th and 20th, within the sheathing leaf of a dead reed stem, about half-way down, in parallel rows, about 50-60 in a batch. They were like a flattened sphere, or coin-shaped, sides straight, with parallel grooves, of a dirty white colour and marked with numerous brownish specks. When first laid they are white, but get rather darker after a few days. They are covered with a glutinous substance giving them a shiny appearance. Breadth ·794mm. They go over the winter, and, on April 26th, I noticed they began to turn a mauve colour, whilst, on April 28th, the first larva appeared. *Larva*.—It was 3mm. long, of a shiny dirty white colour; head black, and with a blackish plate on the prothoracic and anal segments, and under a strong lens the pinkish line down its back was distinctly visible. The larvæ were very restless and wandered all over the place. I put them on a reed leaf, when they walked down it to the stem, and, when they arrived at the base of the leaf, they began to gnaw into the stem. I have never found more than one in a stem, and it will continue to live in the same reed, if the latter is a large one, feeding on the inner cuticle, working upwards, and filling the inside with frass, until ready to pupate, when it bites a hole in the stem and crawls downwards. They never pupate in a living reed but always enter an old one or a short broken bit of reed. The larva enters the latter by eating a hole in the stem, generally a little above a joint and right at the base of the reed stem, and makes the hole for the moth to emerge from right on the joint at the surface of the reed bed, gnawing right through the stem and only leaving the thinnest skin over the hole. The larva then crawls upwards till it comes to the next joint, and here it pupates, head downwards. I cannot help thinking that there must be some mistake in Buckler's account, as given by Barrett, of the larvæ sent him by Lord Walsingham. He says: "May to the beginning of July in the stem of the common reed, feeding in the upper green portions where they are sheathed with green leaves; here a space is eaten out, of a foot in length, and a small circular hole is cut in the side." This sounds more like the larva of *Calamia phragmitidis*, unless the larvæ were about to pupate and had eaten a hole to leave the stem by. Dr. F. D. Wheeler says "this larva feeds also low down in the stems of the large reeds, and always seems too slender for its home," which is much nearer the mark. There is a description and figure of the pupa in Wilde, so I do not propose to deal with it. As regards the imagines, they generally begin to appear about July 24th, and continue to do so till about August 15th-20th. The males hatch just about 6 o'clock in the evening and the females rather later. At dark the males run up and down the reeds searching for the females, and I have often seen a male

pair with a female even before her wings had half finished developing. Now this is rather an important fact as it confirms what Schmidt said about a *neurica* refusing to pair with an *arundineta*. Copulation is generally over by 10 o'clock when the males fly strongly for about an hour.

The insect was first taken in this country at Yaxley Fen, in 1847, by Mr. F. Bond, and soon afterwards it was taken there commonly, as well as at Whittlesea Mere, until they were drained. The black ones also came from Yaxley and, I believe, were not taken again until they were re-discovered, during the last few years, in Suffolk and Kent. The species also occurs in Norfolk, Cambridgeshire, Lincolnshire, Suffolk, Kent, Essex, Middlesex, Lancashire, and Germany, Switzerland, Holland, Denmark, Russia, Persia, and Transcaspia.

The differences between *neurica*, Hb., and *arundineta* may be noted as follows:—

NEURICA.	ARUNDINETA.
Collar white.	Collar same colour as body.
Central streak blackish, containing three white dots, the outer one forming the central spot.	Central streak blackish, no white dots, central spot black, encircled, or partly so, with white.
Underside quite plain, with no markings.	Underside showing the central spots and marginal lunules.

I am deeply indebted to Mr. Prout for his help with the translations from the German, to Herr Püngeler, of Aachen, for sending me specimens of *neurica* and *arundineta*, and also to Mr. Bowles and the Rev. C. R. N. Burrows, for much valuable assistance.

The photographs 1 to 4, 6 to 9, and 11 to 12, were taken by Mr. F. Noad Clark; nos. 5 and 10 (undersides) by H. M. Edelsten.

EXPLANATION OF PLATE II.

1. *N. neurica*, Hb., ♂, taken by Schmidt himself.
2. *N. neurica*, Hb., ♂, from Professor Stange.
3-4. *N. neurica*, Hb., ♀, from Professor Stange.
5. *N. neurica*, Hb., ♂ (underside), taken by Schmidt himself.
6. *N. dissoluta* var. *arundineta*, Schmidt, ♂, taken by Schmidt himself.
7. *N. dissoluta* var. *arundineta*, Schmidt, ♀, taken by Schmidt himself.
8. *N. dissoluta* var. *arundineta*, Schmidt, ♂, from Norfolk Broads.
9. *N. dissoluta* var. *arundineta*, Schmidt, ♀, from Central Asia.
10. *N. dissoluta* var. *arundineta*, Schmidt, ♂ (underside), from Norfolk Broads. Slightly enlarged.
11. Ova *in situ* of *N. dissoluta* var. *arundineta*, Schmidt, from Norfolk Broads.
12. Ova *in situ* of *N. dissoluta* var. *arundineta*, Schmidt, from Norfolk Broads. Enlarged ×15 diameters.

Notes from the Wye Valley: Lepidoptera in 1906.

By J. F. BIRD.

From what I can gather from the entomological magazines, the past season appears to have been a very fair one on the whole, with a good sprinkling of rarities. Perhaps our luck was out, at any rate we shall remember the year 1906 as one of the worst we have experienced since living in the country. I must own that the Diurni were fairly plentiful, but we found the Heterocera, especially the Geometrides, quite below the average. The season began early, and light soon attracted several of the early species. Sallow, also, was attractive, and

we really thought we were going to have a splendid year, but, before the end of May, we were beginning to feel rather dispirited, for dusking was anything but exciting, and beating for Geometrides very unprofitable. In June we tried treacling, but soon gave it up in despair when we found that the Noctuides were "not taking any thank you." It must be the flowers, we said. So *Centranthus ruber*, honeysuckle, etc., were assiduously watched and plenty of the common Plusiids netted, but hardly any of the treacle-frequenting moths noticed. We then tried honeydew, there was plenty of it, but, alas! honeydew was no good at all. I was not surprised, for I have noticed that when treacle is a failure it is not the slightest good working honeydew, which is only attractive when treacling is lucrative. I wonder if this is the experience of other collectors. So sped the months up to the end of August. The treacle-pot was again brought out and we found matters had improved a little. Common moths turned up fairly well, so we had hopes that something really worth taking would join the feast. Again we were disappointed, only the common moths turned up in rapidly diminishing numbers until the middle of September, when treacle was again quite useless. We could only hope that the good things we had waited so patiently for would appear at ivy blossom, but, with the exception of one specimen of *Peridroma saucia*, the few moths that did come were only the usual common autumn species.

Diurni.—I have already recorded (*anteà*, vol. xviii., pp. 277 *et seq.*) the butterflies met with in the Wye Valley last season, up to the end of October, and so will only mention here the few noticed since, to complete my records for the whole year:—*Vanessa io*, November 2nd; *Pyrameis atalanta*, November 3rd; and *Aylais urticae*, November 10th.

Heterocera.—One of the *Sphinx ligustri* bred last year was from a larva I found at Llandogo, on ash. When first found it was curious in having a pink and shagreened horn, which fussed us greatly. A day or two later it moulted, the last change but one, if I remember rightly, when it appeared with its caudal appendage smooth and shining, and of the correct black hue. In confinement it declined to eat ash, but fed up to an enormous size on privet, the resulting imago being a ♀, measuring a shade over 4½ inches. A fullfed larva of *Eumorpha elpenor* was found in my brother's garden, crawling along the ground, preparatory to burying. *Anthrocera trifolii* and *A. filipendulae* we saw, for the first time, in this district. They both made their appearance in the same field, one we have collected in since 1904, and we are hoping they will be able to establish themselves there. The first-named was noted from June 12th to mid-July, whilst the last-named, which was scarcer than the former, was not seen until July 14th, when *A. trifolii* was practically over. I also took two very large specimens of *A. filipendulae* by the roadside, near Gloucester, on July 3rd, which have remarkably broad borders to the hindwings. Although I searched carefully I could find no more. Only one *Hepialus hectus* was met with at Tintern, in a wood, but *H. lupulinus*, *H. sylvinus*, and *H. humuli* were as common as usual. *Nola confusalis* was rather common in our orchard on the trunks of the fruit-trees, and one was found on the upperside of a bramble leaf, close to the droppings of a bird, to which it had a remarkable likeness. *Nudaria mundana* is always plentiful. The best way to find the larvæ is to search the sides

of suitable stone walls at night with a lamp, in May and June, when they may be found in abundance. *Lithosia lurideola* was the only other Lithosiid met with; it is not common here. *Euchelia jacobaeae* turned up as usual, and *Nemeophila plantaginis* met with for the first time and two captured. One fullfed larva of *Phragmatobia fuliginosa* was all that was found of this species, on the last day of July, the spinning up taking place next day. In May, *Dasychira pudibunda* was bred from a larva found on beech at Llandogo; it is not so common here as in Sussex. The larvæ of *Demas coryli* I have found sparingly every year on beech, and, although they change into healthy-looking pupæ, I have not yet succeeded in breeding a single imago. Do they lie over several winters? I ask, because my pupæ look healthy and are still lissom. Will somebody be kind enough to tell me whether they require any special treatment?* In December, *Poecilocampa populi* was scarce; only two ♂s turned up, both being attracted by light. A few larvæ of *Drepana falcataria*, *D. lacertinaria*, and *Notodonta dromedarius* were found in August and September, and *N. dromedarius* and *Lophopteryx camelina* bred in the early part of the year. In 1905, examples of the second brood of the last two, as well as *Pterostoma palpina*, were obtained. The larvæ of *Dicranura vinula* are usually rather common on our poplars, but last year not a single one was seen. *Gonophora derasa* was another of the absentees, and *Thyatira batis* very scarce. *Cymatophora diluta* was rather common at treacle in September, and the larvæ of *Asphalia flavicornis* abundant in May and June. One small larva of *Acronicta leporina* was found on alder, but, unfortunately, refused to eat in confinement. *Triaena psi* was seen on tree-trunks, and *Cuspidia megacephala* noticed in the larval state on poplar. The two broods of *A. rumicis* are usually plentiful at treacle, but scarcely one turned up last year. Even *Agrotis exclamationis* neglected the treacled trees, but was noticed more often at *Centranthus ruber*. *Triphaena pronuba* and *T. orbona* were also scarce at treacle, and only one *T. fimbria* made its appearance. A few *T. janthina* were taken at flowers, and larvæ obtained in the spring on honeysuckle with those of *T. orbona*, *Noctua festiva*, etc. *N. dahlii* (one), and *N. brunnea* were taken at dusk, and *N. plecta* and *N. rubi* at treacle. *Heliophobus popularis* occurred at light more freely than we have before known it here. *Aplecta nebulosa*, *Hadena thalassina*, and *H. dentina* were all scarce. A few *Dianthoecia capsincola* were bred and more larvæ found on sweet-william. Although the larvæ of *Polia flavicincta* and *P. chi* were abundant as usual, the imagines were not nearly so common. *Dryobota protea* at treacle and *Miselia oxyacanthae* with ab. *capucina* at ivy blossom, turned up sparingly in the autumn. *Luperina testacea*, *Xylophasia rurea* ab. *combusta*, and *Apamea gemina* were attracted into the house by light, as was also a smoky example of *A. basilinea*. *Hydroecia nictitans* was not nearly so abundant as usual. Pupæ of *Gortyna flavago* were found in the stems of thistle and foxglove, and specimens, very variable in size, bred. Do the larvæ of *Tapinostola fulva* feed in the stems of *Luzula?* I found it fairly common in a wood at Llandogo where woodrush abounds. *Taeniocampa gothica* was quite the commonest moth at sallow in April, *T. stabilis* being a good second. *T. pulverulenta*,

* See early vols. of *Ent. Record*. Several references can be obtained from "Special Indexes" to these vols., relating to this species.

T. populeti, *T. incerta*, *T. munda*, and *T. gracilis* were some of the other visitors. Two specimens of *T. populeti* were also bred from larvæ found in 1905, when taking those of *Tethea subtusa*; the latter being rather common in that stage on poplar. *Amphipyra pyramidea* and *A. tragopogonis* were both abundant at treacle in September. *Chortodes arcuosa* was taken by my father at light, and *Grammesia trigrammica* also was attracted in this way and one or two netted at dusk, but was much rarer than in 1905. The imagines of *Cosmia trapezina* were quite a nuisance in August, and we got quite tired of turning them out of the net when mothing at dusk. *Anchocelis litura* occurred sparingly at treacle in September, but *A. pistacina*, usually so plentiful, was quite rare, only two specimens being seen. *Orthosia macilenta*, *Mellinia circellaris*, *Orrhodia spadicea*, *O. vaccinii*, and *Scopelosoma satellitia* were more in evidence, but not many of these were noticed, and only single specimens of *Orthosia lota* and *Phlogophora meticulosa*. In the spring one *Xylina petrificata* was taken at sallow, and a single *X. rhizolitha*, found at rest on a stone wall. The latter was the only *Xylina* seen in the autumn, when a few were taken at rest, but not a single specimen seen at ivy blossom. In the spring we bred several *Xylocampa lithoriza*, from larvæ found in the garden, on honeysuckle; the first one emerging on March 1st, sixteen days before the first wild specimen turned up at light. On September 17th, while cycling, I noticed a moth flying wildly about in bright sunshine, near Bigsweir Bridge, so I dismounted and watched it for a minute or so, as it flew from one plant to another, hovering about each as if seeking something. Eventually it flew down into the grass by the roadside, where I managed to box it. On reaching home I found I had secured a male specimen of *Tiliacea citrago*. *Cucullia umbratica*, *Plusia chrysitis*, *P. pulchrina*, *P. iota*, and *P. gamma* all frequented the flowers in the garden, the last three plentifully. *Habrostola urticae* and *H. triplasia* were not so common as usual, and *Heliodes arbuti* was very scarce. In 1904 and 1905 we obtained *Bryophila glandifera* and *B. perla* in small numbers, but saw neither species last year. A few *Sarrothripa revayana* were netted in August and September at dusk, and *Gonoptera libatrix* was common at the same time, flying backwards and forwards in dark corners among bushes. I believe *Catocala nupta* is usually considered scarce in this part of England, so it may be worth noting their presence on telegraph poles near Monmouth. *Euclidia mi* was very common in June, and, on the 12th of that month, I captured four specimens in about five minutes, assembling to a worn and ragged ♀ which was clinging to a grass stem in a field. The ♂s came up swiftly against the wind, flying very straight and low, only just above the tops of the grass, quite unlike the wild and zigzaggy flight of *Lasiocampa quercûs* when seeking the female. At the end of five minutes I found, after securing the fourth ♂, that the attracting ♀ had flown away. In August several of the larvæ were swept, but nearly all were "stung." The parasite that infests them is remarkable in generally attaching its cocoon crosswise on the back of its host. This cocoon, which is fusiform and longitudinally and irregularly ribbed, is remarkably seed-like in appearance. The unfortunate caterpillar, after the parasitic larva has eaten its way out, crawls restlessly about, and lives for several days, perhaps a week, when it shrivels up. *E. glyphica* was also fairly common, and several fine specimens were obtained.

Herminia tarsipennalis, *H. grisealis*, and *Hypenodes costaestrigalis* were all common in their respective haunts, and *Hypena proboscidalis* abundant everywhere. Has the natural foodplant of *H. costaestrigalis* been discovered yet? This species is locally plentiful in damp spots in and, more especially, on the outskirts of woods, and I have often watched the ♀ s at dusk, hoping to discover one in the act of ovipositing, but without success. They most frequently settle on grass stems in dark corners near bushes, where they remain for several minutes without moving. On July 4th I beat a specimen of *Bomolocha fontis*, and during the last week of August found the larvæ common on *Vaccinium myrtillus*. One *Rivula sericealis* was netted at dusk in July at Llandogo, the only specimen we have met with here. On March 7th I saw the first *Brephos parthenias* near Redbrook, Gloucestershire, and, on the 28th of that month, had the pleasure of capturing a fine specimen in a wood at Tintern, schoolboy fashion, with my cap, while it was settled and fluttering its wings on woodrush. This handsome species was common last year, but I only captured two, the second on April 7th at Llandogo, when it flew down and settled almost at my feet. *Urapteryx sambucaria* was common, but *Angerona prunaria*, which occurred freely in 1905, was decidedly scarce. A few *Venilia macularia* were taken in a wood, but it was not common. *Cabera pusaria* and *C. exanthemaria* males, and *Bapta temerata* females, were as common as usual. Have other collectors noticed the scarcity of the females of the first two and the males of *B. temerata*? *Macaria notata*, *Numeria pulveraria*, and *Gonodontis bidentata* were all scarce last year, and *Panagra petraria*, though common, in much fewer numbers. *Ennomos angularia*, *Epione advenaria*, and *Metrocampa margaritata* were to be obtained by beating, and *Selenia bilunaria*, *S.* var. *juliaria*, and *Pericallia syringaria* taken at dusk. *Phigalia pedaria* made its first appearance on January 25th, at light. In May several *Tephrosia crepuscularia* (*biundularia*) were found on tree-trunks, and one very handsome melanic specimen bred. *T. punctularia* was very rare, only one specimen being met with, and *T. extersaria*, which was common in 1904 and scarce in 1905, was not seen at all. *Boarmia repandata* was bred and also netted at dusk, but was not common. *B. rhomboidaria* occurred in the garden, and one *Hemerophila abruptaria* netted at Llandogo. I do not think the latter is common about here. Of the autumn Hyberniids, only *Hybernia defoliaria* turned up, but not plentifully. *H. progemmaria*, *H. rupicapraria*, and *H. leucophaearia* were all noted in the early part of the year, light attracting the last named on January 30th. *Anisopteryx aescularia* was bred and specimens also came to light, the first on February 27th. *Abraxas ulmata* was very scarce in a locality where we usually find it in abundance, and even *A. grossulariata* was not very common last season. We have no *Euonymus europaeus* in our immediate neighbourhood, and consequently have not seen much of *Ligdia adustata*, but, in September, on the Gloucestershire side of the river, near Bigsweir, I discovered plenty of these bushes and soon found several larvæ, but they were nearly all "stung." In May, larvæ of *Geometra papilionaria* were found on birch, and several fine specimens bred. One example of *Ephyra punctaria* was beaten in a wood at Tintern, a species we have not met with before in this district. *E. trilinearia*, usually common among the beeches, was not seen at all in the winged state, but in August the larvæ were noted. On August

5th, at dusk, I watched a female *Acidalia bisetata* ovipositing. It settled on the underside of an apple leaf, on the midrib, towards the base of the leaf, and laid one ovum, attaching it to the long down on the rib. The egg hatched on August 12th. At the end of June *Acidalia subsericeata* was captured at dusk; a species new to us. *Melanippe hastata* was bred and also netted in June. It is rather fond of the flowers of *Euphorbia amygdaloides* and wild hyacinth. Later on in the season a few of the larvæ were obtained from birch. *M. subtristata*, *M. unangulata*, *M. procellata*, *Melanthia albicillata*, and *M. rubiginata* were all scarce, though usually common. *Anticlea badiata* and *A. nigrofasciaria* were met with in the spring, and both were attracted by light; the former also visiting the sallow. *Coremia propugnata*, *C. unidentaria*, and *Larentia didymata* swarmed as usual, and *C. ferrugata* and *L. pectinataria* seen in fewer numbers. *Asthena sylvata*, *A. blomeri*, and *Minoa euphorbiata* were all much scarcer than usual, and only one or two specimens of *A. luteata*, *Eupisteria heparata*, and *Emmelesia decolorata* noticed. *Cidaria miata*, *C. corylata*, *C. picata*, *C. russata*, *C. immanata*, *C. suffumata*, *C. silaceata*, *C. prunata*, *C. fulvata*, *C. populata*, and *C. testata* were netted at dusk or beaten. *Scotosia dubitata* was very common at dusk, which, I am glad to say, *Camptogramma bilineata* was not, nor does it ever swarm here as it does in Sussex. *Hypsipetes sordidata*, with plenty of the smoky varieties, occurred freely, and one lovely aberration, similar to the one depicted on pl. 369, fig. 1*b*, in Barrett's *Lepidoptera of the British Islands*, but even more striking, was netted at dusk on August 20th, in perfect condition. *Cheimatobia boreata* usually turns up at light in November and December, but not a single specimen made its appearance last year. *Lobophora hexapterata* was also absent, but *L. lobulata* was not uncommon on tree-trunks at the end of March and in April, and was also bred from sallow. Several *Chesias spartiata* were taken on the windows, attracted by light, and one *C. obliquaria* bred from a larva found in 1904, and so had passed two winters as a pupa. *Anaitis plagiata* turned up sparingly in August and September, and *Eubolia limitata* at the end of July. *Eupithecia pulchellata* was bred from larvæ obtained in foxglove flowers, and *E. castigata* from one feeding in the seed-vessels of sweet-william. *E. abbreviata* was common in a wood on April 6th, and very variable. Other "pugs" taken or noticed were *E. subfulvata*, *E. vulgata*, *E. absynthiata*, *E. assimilata*, and *E. rectangulata;* but *E. lariciata* and *E. isogrammata*, though taken rather commonly in 1905, were not met with at all.

Notes on Egyptian and Syrian Butterflies.

By PHILIP P. GRAVES.

PAPILIO MACHAON.—*Syria:* May 17th, 1905, flying with *Iphiclides podalirius* near Aleih. July 9th, 1904, Dog River, near Beyrout. A few seen July 10th-15th, at Ain Zahalta. This species does not appear to occur in Egypt.

PIERIS BRASSICÆ.—*Syria:* Common at Beyrout, end of July, 1904, and just appearing at that time on the Lebanon mountains. Jaffa, May 9th, 1905. The second brood specimens have a very light underside, while the apical markings in both sexes, and spots in the ♀, are well developed. Apparently not in Egypt. Occurs in Cyprus (Marsden).

PIERIS RAPÆ.—VARIATION.—α. *Size:* My largest specimen, a ♀ taken near Cairo at the beginning of April, 1903, measures 56mm. in expanse; my smallest, a ♂ taken near Alexandria on April 25th, 1904, 36mm. The latter specimen was taken among several decidedly large specimens averaging 50mm. On the whole, *P. rapae* appears to reach a larger average size than in Great Britain, none of my specimens, save that above mentioned, being less than 40mm. in expanse. β. *Markings of upperside:* Apical blotch varies in size, very indistinct in a ♀ taken at Alexandria in June; darkest in the large ♂s taken near Alexandria, April, 1904. *Spots on anterior wings:* Inclined in ♀ to be crescentic, or rather arrow-headed, pointing towards the outer margin. One ♀, Cairo, March, 1903, has the spots large and blotched, of a dark brownish-grey tinge, also noticeable on the apical spot. No absolutely unspotted specimens. γ. *Suffusion on costa and at base of posterior wings*, etc., most marked in winter specimens, November, 1903, December, 1904, never very considerable. δ. *Colour of underside of posterior wings:* The ground colour is usually darker in spring and winter specimens, taken between November and March, than in others. A ♀ from Alexandria, June, 1904, shows a very pale yellow, indistinguishable by artificial light from white. The black powdering on the wing, on and just below the discoidal area, is most pronounced in winter and early spring, least in late spring and summer specimens, some of which show hardly a trace thereof. ε. *General:* I find two characteristics common to all my Egyptian specimens. (1) Absence of any pronounced shade of yellow on upperside of ♀s, cream being the nearest approach thereto. (2) Spot on inner margin of upperside of posterior wings broken, except in one instance, where it takes the form of a faint streak running down from the inner margin, and two where an almost microscopic point is all that can be seen. RECORDS OF EMERGENCE.—*Cairo district:* March 13th, 1904, March, 27th, 1903, April, 1903; *Alexandria:* April 25th, 1904, June 5th, 1904, June 15th, 1903, December 24th-27th, 1903, January 10th-20th, 1903, September 21st, 1904; *Cairo:* January 20th-30th, 1903, May 1st, 1903, August 16th, 1903, November 1st-30th, 1903. HABITAT.—Everywhere in cultivated districts, occurring in the Delta and Middle Egypt in gardens, clover fields, etc., often in abundance. It is absent from the desert and apparently the Maryût Steppe district, and I have not seen it south of Luxor, where I noted an odd specimen in February, 1906.

PONTIA DAPLIDICE.—*Egypt:* I have only twice noted this insect in Egypt, *viz.*, one small, very worn ♀ near Cairo, early August, 1903; one ♂ seen at Port Said, June 13th, 1906. ♀ specimens taken by Guyot in the desert wadis, near Helwan, are smaller than Syrian ♀s. I understand that *P. daplidice* is very rare there; Mr. Marsden has not noted it from the Maryût country or the neighbourhood of Alexandria. *Syria:* This insect is decidedly common all over Syria—from sea-level to a considerable height in the mountains. LOCALITIES AND DATES.—*Beyrout district:* very common, July 7th-9th, 1904; *Ain Zahalta:* from mid-July, in 1904, abundant; *Jaffa:* May 9th, 1905; *Haifa:* May 10th, 1905; *Beyrout:* May 12th, 1905; near *Damascus:* worn, mid-May, 1905; *Trans-Jordan Steppes* near Hedjaz Railway: end of

* I should say Asswân was as likely to be its southern limit as any place.

May, 1905. The males of the summer brood are, in my experience, decidedly small as a rule.

PYRAMEIS CARDUI.—HABITAT.—An insect with most catholic tastes, occurring often in large numbers, in town and country, in the desert wadis and the open Maryût Steppe, and in the most thickly cultivated parts of the Delta and the Upper Nile Valley. DISTRIBUTION.—Throughout the Nile Valley, from Alexandria to Assouan, at Khartoum (Graves); the Maryût Steppe (Marsden); desert wadis, near Helwan (Graves, Guyot); Sinai (Guyot); Port Said, etc., etc. VARIATION.—Fresh specimens frequently more flushed with rose on the anterior wings than British *P. cardui*. In size, they do not differ from British specimens, nor vary much *inter se*. No aberrations noted. FOODPLANTS.—Besides thistles, the larva occasionally devours cotton plant according to Mr. F. Willcocks, Entomologist to the Khedivial Agricultural Society. RECORDS OF EMERGENCE, ETC.—*Alexandria district:* June 15th, 1903 to June 29th, 1903, April 4th, 1904, September 1st-15th, 1904. *Cairo district:* Fresh, February 8th, 1903, March 22nd, 1903, April 5th, 1903, August 30th-end of September, 1903 (abundant), October 16th, 1903 (abundant), November 11th, 1904. *Port Said:* June 13th, 1905. *Maryût district:* Very common, May 5th, 1903, flying in swarms on low slopes of limestone above Sidi Merghab Village. *Khartoum:* Worn specimens, February 1st-5th, 1906, in gardens. May be seen, worn or fresh, in any month in the year, but in my experience is, if anything, most abundant in April and May, though I have also seen it in large numbers in June and in October. DESERT LOCALITIES.—Wadi Rished, near Helwan, very common on thistles, March 17th, 1905, and April 28th, 1905; Wadi Hof, April 22nd, 1903; Mokatam Plateau, October 21st, 1903.

PYRAMEIS ATALANTA.—*Habitat:* Occurs both at Alexandria and Cairo, but rarely in the latter locality, where I have only taken one specimen, though I have every year seen odd specimens in gardens in the European quarter. It is not very uncommon in gardens, etc., at Alexandria and Ramleh, especially in March, April, and May. TIME OF APPEARANCE.—*Cairo:* Near Cairo: January 28th, 1903; Ezbet el Nahhle, near Cairo, October 18th, 1905; Cairo—Kasrel Donbara quarter, seen February, 1904, and October, 1906. *Pyrameis atalanta* has been more common than usual at Cairo this winter, 1906-7 (Willcocks). *Alexandria:* May 7th, 1903; commencement of March to commencement of May, 1904.

PARARGE MEGÆRA.—*Syria:* HABITAT.—Occurs throughout the Lebanon region from sea-level to the summits. VARIATION.—Not very extensive as far as my limited experince goes. The dark band across the centre of the anterior wings is, in July specimens, more heavily powdered with light yellowish-brown scales than is the case with my British specimens, and the underside of the posterior wings has a more ashy-grey appearance. [*Cf.* Staudinger's description of var. *lyssa*, "alis posterioribus subtus cinerascentibus."] TIME OF APPEARANCE.—A few worn specimens seen high up (5000 feet) above Baalbek, May 29th, 1905, and one very worn on the Jebel Barouk above Ain Zahalta, June 3rd. It was fairly common between July 10th-30th, 1904, at Ain Zahalta, at altitudes of 3000ft.-4000ft., especially haunting dry grassy banks. Dog River, July 8th, 1904.

COENONYMPHA PAMPHILUS.—HABITAT.—*Syria:* Not uncommon at Ain Zahalta and other high localities in July. VARIATION: These specimens, taken at Ain Zahalta, appeared to be ab. et var. *thyrsides*, the ♂s having, as a rule, three or four, and never less than two, distinct small eye-spots on the upperside of the posterior wings. In no cases did the row of eye-spots on the underside of the posterior wings contain less than four spots with silvery white centres. In the ♀s the underside ground colour was usually ochreous, the eye-spots smaller, and often without distinguishable light centres. On the upperside the spots tended to be indistinct. Spring specimens (worn), taken at Ain Sofar (4800 feet) and Ain Zahalta, were indistinguishable from British in appearance. TIME OF APPEARANCE, ETC.—Ain Sofar, May 30th, 1905; Ain Zahalta, July 9th-30th, 1904.

BITHYS QUERCÛS.—*Cyprus:* Mr. Marsden's collection contains large specimens up to 42mm. in expanse, taken on Mount Troodos, in late July. I have not seen this "hairstreak" in Syria or Egypt, and am sure it is not to be found in the latter country where there are no oaks.

LAMPIDES BOETICUS.—*Syria:* I have no Syrian ♀s. Males appear typical—found near broom, middle to end of July, 1904, Ain Zahalta—Lebanon. Beyrout, beginning of August and early July, 1904. Jaffa, May 9th, 1905. According to Marsden, common in Cyprus. *Egypt.*—VARIATION.—α. *Size:* A small form occurs here and there (and not uncommonly) in the summer and autumn months. My smallest specimen of this form, a ♂, did not exceed 19mm. in expanse. Two ♀s of this form, of 22mm. in expanse, are darker than the type, with less blue suffusion, and, in general, a duller aspect. This form was described as var. *aestiva* by Zeller. It appears to me to be simply the result of underfeeding—the final development of a half-starved larva, and would presumably be more common in bad Nile years. I have noted it in May, June, and November. In the ♀s of the Egyptian *boeticus*, the wing-expanse at times reaches 36mm. The largest ♂ I possess expands 33mm. β. The blue suffusion of the wings in the ♀ is, at times, very bright and pronounced, extending over the whitish submarginal and marginal bands of the posterior wings, which bands are, in the case of one of my ♀ specimens, of an almost milky-blue colour. Desert specimens of the ♀ are dull. All ♀s thus far taken at Maryût by me are suffused with very bright blue, as are many from Alexandria and the Cairo district. FOODPLANTS.—Peas, beans, lentils (wild and uncultivated), and various species of vetches. TIME OF APPEARANCE.—Almost as likely to be found in one month as in another, though commoner in late spring than at any other time. A few records may be given:—near *Cairo:* January 1st, 1903, February 25th, 1903, March 8th, 1903, May 1st, 1905, May 15th, 1906 (*aestiva*), November 23rd, 1903 (*aestiva*). *Port Said:* mid-June, 1905. *Alexandria:* July, 1903, August and September, 1904. *Maryût district:* February 21st, 1904. *Khartoum:* February 1st-5th, 1906. HABITAT.—Most common in bean and clover fields and gardens, but occurs on the Maryût Steppe, and in every desert wadi which contains a certain amount of vegetation. Probably the most abundant Egyptian butterfly. LOCALITIES.—Near Cairo and Alexandria, throughout the Delta, upper Egypt (Rothschild), Port Said, Sinai (Guyot), in Sudan—Khartoum (Graves), in desert wadis near Cairo, Helwan, etc.

CYANIRIS SEMIARGUS VAR. ANTIOCHENA. — *Syria:* This beautiful variety—if it be a variety—of *semiargus* occurred June 1st-4th, 1905, near the summit of the Jebel Barouk, above Ain Zahalta, at a height of about 6500ft. One worn ♂ was taken in company with *Polyommatus amanda* and *Cyaniris cyllarus*, in a mountain meadow some 1500ft. lower. *Antiochena* did not occur abundantly on the mountain, flying, for a "blue," rather slowly over patches of grass and flowers in an open and stony cedar wood. Here five ♂s and 2 ♀s were taken. I have not found it elsewhere. Not seen in Egypt, and hardly likely to occur there.

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from* p. 39).

GENUS VI: THYREONOTUS, Serville.

In this genus, the pronotum is produced very strongly backwards over the abdomen, almost entirely covering the elytra. Two species are known.

TABLE OF SPECIES.

1. Lower inner border of posterior femora with little spines; cerci ♂ with inner lobe ending in a point; subgenital lamina ♀ with hinder border roundly emarginate	1. CORSICUS, Serv.
1.1. Lower outer border of posterior femora armed with strong spines; cerci ♂ with the inner lobe rounded at the apex; subgenital lamina ♀ produced posteriorly into two strong spines..	2. BIDENS, Bol.

1. THYREONOTUS CORSICUS, Serville.

Yellowish-grey, marbled with chestnut; anterior femora of the male with lateral black bands; of female, testaceous. Length of body, 23mm. ♂, 24mm. ♀; of pronotum, 13mm. ♂, 12mm. ♀; of posterior femora, 30mm. ♂ and ♀; of ovipositor, 17mm. ♀.

Doubtfully recorded from Corsica by Serville. It occurs in France, but is very rare; it is recorded from Bastia, Amèlie-les-Bains, and Narbonne. In Spain it is common; occurring along the coast from Cadiz to Barcelona. The variety *montanus*, Bol., which is smaller, and has longer elytra (length of body, 21mm. ♂, 26mm. ♀; of pronotum, 8mm.-9mm. ♂ and ♀; of posterior femora, 21mm.-23mm. ♂ and ♀; of ovipositor, 19mm. ♀), is peculiar to the mountainous regions of central Spain, having been recorded from Oña, Uclès, and Albarracin.

2. THYREONOTUS BIDENS, Bolivar.

Differs from *T. corsicus* in the form of the subgenital lamina of the female, which is produced into a pair of strong spines; also in the form of the cerci of the male and armature of the posterior femora, as indicated in the table. Length of body, 26mm. ♀; of pronotum, 10mm. ♀; of ovipositor, 20mm. ♀.

Spain; Cortijos de Malagon, Pozuelo de Calatrava, and Cordoba, in August and October. Also in Portugal, at Lisbon.

GENUS VII: ANTAXIUS, Brunner.

This is the last genus of the group with spined prosternum; it resembles *Thyreonotus* in its chief characters, but the pronotum is normal and truncate, so that the elytra are quite free. The discrimination of

the species is somewhat difficult, and the synonymy is rather confused. One species, *A. florezi*, Bol., is characterised by having the prosternum unarmed, but yet it requires, provisionally at least, to be ranged in this genus.

TABLE OF SPECIES.

1. Prosternum unarmed, with no spines	1. FLOREZI, Bol.
1.1. Prosternum with two spines.	
2. Plantulæ about as long as the first tarsal segment.	
3. Ovipositor curved downwards; lateral veins of elytra ♂ brighter than ground colour; left elytron ♂ with tympanal area	2. SPINIBRACCHIUS, Fisch.
3.3. Ovipositor curved downwards; lateral vein of elytra ♂ blackish; left elytron ♂ with no tympanal area	3. KRAUSSI, Bol. (*nec* Brunner).
2.2. Plantulæ much shorter than first tarsal segment.	
3. Elytra ♂ about as large as broad, the outer border blackish; hinder femora long and slender (22mm.-24mm.).	
4. Pronotum with no trace of keel, the hinder border faintly emarginate, the side flaps bordered with pale	4. PEDESTRIS, Fabr.
4.4. Pronotum with faint median carina, hinder border entire; side flaps unicolorous ..	5. SORREZENSIS, Marquet.
3.3. Elytra ♂ transverse, uniform yellow, hinder femora much shorter (15mm.-18mm.).	
4. Ovipositor as long as hinder femora ..	6. HISPANICUS, Bol. (=KRAUSSI, Br.).
4.4. Ovipositor shorter than hinder femora.	
5. Elytra free, fairly long; Tirolese species	7. BRUNNERI, Krauss.
5.5. Elytra shorter than metanotum; Catalan species	8. CAPELLEI, Cazurro.

1. ANTAXIUS FLOREZI, Bolivar.

Chiefly characterised by the unarmed sternum, though possessing the other characters of the genus; dark chestnut or greyish-fuscous; the side flaps of the pronotum have a black spot in front and behind, and a short white stripe behind; the posterior femora have a broad black stripe on the outer side, and are not spined beneath. Length of body, 20mm. ♀; of pronotum, 5mm. ♀; of elytra, 1·5mm. ♀; of posterior femora, 17mm. ♀; of ovipositor, 15mm. ♀.

This species was recently discovered by Bolivar on an excursion from Puerto de Leitariegos to the Monastery de Hermo, in Spain.

2. ANTAXIUS SPINIBRACCHIUS, Fischer.

Dark greyish; pronotum with side flaps black, entirely bordered with yellow; hinder femora not spined; cerci of male with the internal lobe broadened from the base to the inner tooth; subgenital lamina of female sulcate in the middle; the veins of the elytra of the male are brighter than the ground colour, and the left elytron has the tympanum developed; anal segment of the male with an angular excavation in the middle; ovipositor quite straight, longer than the body. Length of body, 19mm. ♂ and ♀; of pronotum, 5·5mm. ♂, 6·5mm. ♀; of elytra, 4·5mm. ♂, 4mm. ♀; of posterior femora, 17mm. ♂, 20mm. ♀; of ovipositor, 21mm. ♀.

Widely distributed through Spain and Portugal; the species seems to be variable, and has been discussed by Pantel (*An. de la Soc. Esp. de Hist. Nat.*, XXV., p. 103).

8. ANTAXIUS KRAUSSI, Bolivar (nec *kraussi*, Brunner).

Resembles the preceding, but differs in the elytra having the veins dark greyish or blackish, and there being no tympanum on the left elytron; the anal segment of the male is produced into two spines; the subgenital lamina of the female has a deep median sulcus, and the ovipositor is curved downwards. Length of body, 16mm. ♂ and ♀; of pronotum, 4mm. ♂, 4·9mm. ♀; of elytra, 3mm. ♂, 2mm. ♀; of posterior femora, 16mm. ♂, 18mm. ♀; of ovipositor, 19mm. ♀.

It must be noted that this is not the species described under this name by Brunner in his *Prodromus;* Brunner's insect is the same as *A. hispanicus* of Bolivar.

A native of Spain, recorded from Albarracin, El Salto and Portella.

4. ANTAXIUS PEDESTRIS, Fabr.

Chestnut or pale; the elytra are black, with a large yellow spot; this, with the shorter ovipositor, the triangular lobes of the subgenital lamina of the female, and the two or three spines beneath the femora, distinguish it from *A. hispanicus*. The femora are also longer and more slender. Length of body, 19mm. ♂, 23mm. ♀; of pronotum, 5·2mm. ♂, 6·2mm. ♀; of elytra, 4mm. ♂, 1·5mm. ♀; of posterior femora, 17mm. ♂, 21mm. ♀; of ovipositor, 17mm. ♀.

Fairly common in the Tirol, Vorarlberg, and Piedmont, and generally in the southern Alps on shrubs. In France, it occurs in the south, at Larche, Aix-les-Bains, Cannes, Hyères, Saint Martin, Lantosque, Gavarnie, Bagnères de Luchon, Chanrousse, Ramatuel, Bagnols, Montauroux, and le Rayran. As it seems to be fairly common in the French Pyrenees, it may be expected to occur on the Spanish side. It does not occur in the northern Alps.

5. ANTAXIUS SORREZENSIS, Marquet.

Distinguished from *A. pedestris* by the unspotted bright green colour, by the trace of a central keel on the posterior part of the pronotum, which has the hinder border entire, by the unicolorous side flaps of the pronotum, by the longer elytra of the female, by the six or seven spines beneath the posterior femora, by the subgenital lamina of the female, with lobes long and half-crescent shaped; the male is not known. Length of body, 22mm. ♀; of pronotum, 6·5mm. ♀; of elytra, 1mm. ♀; of ovipositor, 20mm. ♀.

Discovered on shrubs and oaks near the road from Revel to Camazes, in Languedoc.

6. ANTAXIUS HISPANICUS, Bolivar
(=*kraussi*, Brunner *nec* Bolivar).

Allied to *A. pedestris;* differs in the unspotted reddish elytra, with the hinder border subobliquely truncated, by the longer elytra of the female, by the unarmed posterior femora, and blunter rounder lobes of the subgenital lamina of the female. Length of body, 16mm. ♂, 19mm.-23mm. ♀; of pronotum, 5·5mm. ♂, 6mm. ♀; of elytra, 3mm.-5mm. ♂, 1mm.-3mm. ♀; of ovipositor, 17mm.-21mm. ♀; of posterior femora, 15·5mm. ♂, 17mm. ♀.

Very rare in France, as yet only found on Canigou, in the eastern Pyrenees. In Spain, at Nuria, Gerona, Monseny, Set Casas in Catalonia, and at Panticosa in the Pyrenees, and also at Albarracin.

7. ANTAXIUS BRUNNERI, Krauss.

Femora all unarmed; prosternum with very blunt spines; ovipositor incurved, shorter than the posterior femora; the pronotum has a median carina; the colour is greyish-black; the elytra are yellow, with the lateral margin narrowly bordered with chestnut. Length of body, 18mm.-19mm. ♂; 19mm.-22mm. ♀; of pronotum, 4.5mm. ♂ and ♀; of elytra, 6mm. ♂, 2mm. ♀; of posterior femora, 15mm. ♂, 16mm. ♀; of ovipositor, 11mm.-12mm. ♀.

In stony places at Piz Languard, near Pontresina, Bad Ratzes, the Seisser Alp; in the northern Alps, in a small valley on the road from Ragaz to Bad Pfaffers.

8. ANTAXIUS CAPELLEI, Cazurro.

Varies from dark ochreous-grey to livid; differs chiefly from *A. hispanicus* in the shorter ovipositor and elytra. Length of body, 22mm. ♀; of pronotum, 6mm. ♀; of elytra, 15mm. ♀; of posterior femora, 18mm. ♀; of ovipositor, 13·5mm. ♀.

Taken on the top of the Pico de San Jeronimo, on the top of Montserrat, in Catalonia.

(To be continued.)

Anurida maritima, Guér., and its enemies.

By RICHARD S. BAGNALL.

A grey and sluggish Apteron, *Anurida maritima*, Guér., is often found living gregariously beneath stones, etc., below high-water mark, and, at high tide is sometimes to be observed standing on the water of quiet pools. In July, 1906, I found the species on the shores of Ayrshire, Arran, the Cumbraes, Kyles of Bute, etc., and the following month on the Northumberland and Durham coasts, and invariably found living with it, also gregariously, the peculiar Staphylinid beetle *Micralymma brevipenne*, Gyll., which curiously enough strongly resembles the *Anurida*. Ultimately I found that *Micralymma* preyed chiefly, if not exclusively, upon the Apteron with which it associates, its chief care upon attacking being to raise its prey from the surface upon which it rested at the time of attack.

Aëpus marinus, Ström., though local, was found in great profusion below high-water mark in all the localities mentioned above, and though it does not, as a rule, live with the *Anurida*, yet it preys largely upon the young forms of the Apteron in question, as also no doubt does *Aëpus robini*, Lab.

Yet still another beetle, *Cillenus lateralis*, Sam., have I seen devouring this poor persecuted species of *Collembola*, but whether it forms the habitual food of *Cillenus* or not, it is difficult to say.

I have been informed that a peculiar Hemipteron, *Aëpophilus bonnairei*, Sign., also preys on *Anurida maritima*, but, unfortunately, I cannot recall my authority for making the statement.

In October, Dr. Randell Jackson sent me some hundreds of specimens of *Anurida maritima* from the Isle of Man, and with these, examples of *Micralymma brevipenne* and *Aëpus marinus*, the former of which he had observed devouring the *Anurida*, and he further mentioned the fact that a rare maritime Chernetid or Pseudo-Scorpion (*Obisium maritimum*, Leach), subsists on *A. maritima* also. I may add that I have observed the common Pseudo-Scorpion (*Obisium muscorum*, Leach), with a well-known Apteron (*Anura muscorum*, Templ.), in its clutches.

COLEOPTERA.

BYTHINUS BURRELLI, DEN., IN THE DERWENT VALLEY, ETC.—In October, 1906, I found a female example of *Bythinus burrelli* amongst haystack refuse in Axwell Park. Though not recorded by Bold, a single male has been taken by Hardy in the Wooler district, and another male by Blatch, near Hartlepool. I am now able to record *B. puncticollis*, Den., *B. validus*, Aub., *B. bulbifer*, Reich., *B. curtisi*, Den., *B. securiger*, Reich., and *B. burrelli*, Den., from the Derwent Valley.—I would also mention the occurrence of *B. validus*, Aub., with *B. puncticollis*, Den., and *B. bulbifer*, Reich., from a bag of moss which my friend, Mr. Gillanders, kindly sent me from Alnwick (January, 1907). *B. validus* previously rested in our Counties' list on a single example taken by myself at Gibside early last year.—R. S. BAGNALL, Winlaton. *February 12th*, 1907.

AGABUS AFFINIS, PAYK. AND AGABUS UNGUICULARIS, THOMS., AS WARWICKSHIRE INSECTS.—In my "List of Warwickshire Coleoptera" (*Vict. Hist. Warwickshire*, i., p. 87), I recorded *Agabus affinis*, Payk., and *A. unguicularis*, Thoms., on the authority of the late W. G. Blatch. All these specimens on which these records were made turn out to be *A. affinis*, so that *A. unguicularis* must for the present be struck out of the Warwickshire list. The two species are very closely allied, but the difficulty of determination can be overcome by reference to Mr. Balfour-Browne's lucid notes (*Ent. Rec.*, xviii., p. 273), and I am indebted to him for his kind assistance in this matter. From the known distribution of the two species in Britain, it appears that where one is common, or moderately so, the other is either very rare or absent, and this fact led to a closer examination of the specimens. It is interesting to have *A. affinis* as a Warwickshire insect to the exclusion of *A. unguicularis*, as, of the two, the latter would have been the more likely to have occurred with us. As suggested by Professor Hudson Beare in his "Retrospect of a Coleopterist for 1906" (*Ent. Rec.*, xix., p. 29) it would be well for collectors to carefully examine their specimens of the two species with the assistance of Mr. Balfour-Brown's paper, and correct any inaccurate records that may have been made.—H. WILLOUGHBY ELLIS, F.E.S., Knowle, Warwickshire. *February 28th*, 1907.

LEPTIDEA BREVIPENNIS, MULS., AND GRACILIA MINUTA, F., AT LULWORTH.—During July, 1905, I spent a few days at Lulworth, the weather was very hot and general collecting most unsatisfactory; everything was dried up. The last morning of my visit, I saw in the bright sunshine several specimens of *Leptidea* alight on a whitewashed wall, and I captured half-a-dozen, and traced their origin to the red osiers, called "red witheys" by the fishermen, who cultivate and use them for lobster-pot making. I also found *Gracilia minuta*, F., breeding in them. The osiers had recently been cut and stored away in a shed, and I found dead imagines in them. There is no doubt that the insects pass their preliminary stages in the growing "witheys." The fishermen told me that they did considerable damage by their borings, and during the operation of bending to make the lobster-pots, the osiers break where the beetles have perforated them. I saw the spot where the osiers were grown, and I was assured that no foreign ones were ever imported. Amongst other captures during my visit were

the following:—*Harpalus caspius*, Stev., at Portland; *Caulotrypis aeneopiceus*, Boh., *Apion urticarium*, Hbst., *Sphodrus leucopthalmus*, L., and *Rhinocyllus latirostris*, Latr., at Lulworth.—IBID.

NOTES ON COLLECTING, Etc.

RESTING-HABIT OF AGRIOPIS APRILINA.—I was surprised to see in the current number of the *Ent. Rec.* that Mr. Colthrup and his naturalist friends had never taken *Agriopis aprilina* at rest on tree-trunks. I have done so occasionally in the Leith Hill and Cranleigh districts, in the daytime, usually on oak-trees, and once on the bare smooth bark of a beech tree, where the insect was sufficiently conspicuous, and usually about five feet from the ground.—F. PENNINGTON, 17, Hyde Park Terrace, W. *January 26th*, 1907.

RESTING-PLACE OF PAPILIO MACHAON.—Can any of your readers inform me where *Papilio machaon* rests at night, whether on trees, or on the low herbage of the meadows? M. GILLMER, Cöthen, Anhalt, Germany. *Feb. 6th*, 1907. [Certainly in Britain this species must rest on the low herbage, the almost entire absence of trees in the marshy localities where it is now most abundant, making this almost a necessity, and our experience in France and Switzerland points in the same direction. On the other hand, *Iphiclides podalirius* loves the trees, and our observation on the roosting-habit of this species (*Ent. Rec.*, ix., p. 81), has since been confirmed in other localities. We should like to have information from those who have observed *P. machaon* at rest.—ED.]

SUPPOSED ABSENCE OF CALLOPHRYS RUBI IN SOME BRITISH COUNTIES.—I have been considerably slated at various times for my "locality" lists in *A Natural History of British Lepidoptera*, but still I get wofully puzzled sometimes over the distribution of our very commonest species. I have just been working through that of *Callophrys rubi*, and it appears that there are many counties in England (as well as Scotland and Ireland) where the species does not occur, although common in the surrounding counties. Two in particular, strike one as most strange, Bedfordshire and Leicestershire. Newman says that in those counties where this species has not been observed "its absence may be supposed to arise from want of observation." Is this true? Are there no counties in which it does not occur? Again, it is unrecorded for Durham and Northumberland, yet it abounds in some places in Yorkshire, Cumberland, Westmorland, and further north in Perthshire, Argyleshire, etc. Why? I should be very glad for any details of the distribution of this, or other of our "hairstreaks."—J. W. TUTT, 119, Westcombe Hill, S.E.

HYBERNIA DEFOLIARIA IN JANUARY.—Referring to Mr. Raynor's note on this subject (*anteà* p. 46), it may be of interest to add, that I took a fresh specimen of *H. defoliaria* ♂ at light at Wimbledon Common on January 15th, 1907.—RALEIGH SMALLMAN, F.E.S., 6, Mostyn Terrace, Eastbourne. *February 17th*, 1907.

PIERIS RAPÆ IN FEBRUARY.—It may be interesting for you to know that we found a specimen of *Pieris rapæ* in our kitchen to-day, quite fresh, and evidently just emerged from the chrysalis. Is this not very exceptional?—CHARLES NEWBERY, 32, Annandale Road, East Greenwich, S.E. *February 16th*, 1907.

Lepidopterological notes from Burnley for 1906.—The spring was very cold and backward in 1906. Larvæ were very scarce, and I found that the resulting imagines were considerably later in emerging than normally. Autumn insects were very abundant on the moors during August and September, particularly *Celaena haworthii* and *Cidaria populata*, but *Oporabia filigrammaria* was rather late, and only fairly numerous. The following insects were new to our local list—*Asphalia flavicornis* and *Anisopteryx aescularia*, both taken by Mr. A. E. Wright, from gas lamps; *Triphaena ianthina*, a specimen of which flew into my house.—W. G. Clutten, 132, Coal Clough Lane, Burnley. *January 30th*, 1907.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Larva of Melitæa aurinia hybernating over two winters.—I wonder whether it has been previously observed that the larvæ of *Melitaea aurinia* sometimes go over two winters. On April 2nd, 1900, I received a quantity of *M. aurinia* larvæ, from Cumberland, just out after hybernation. They all came out and basked in the sunshine as usual, but, after a few days, about 5 per cent. spun fresh webs and went inside, and, although I tried to force these to feed up under glass, it was of no use. They refused to leave the web until March 1901, when they fed up in the usual way. On another occasion I had the same experience, but as there were only some five or six larvæ involved, I did not trouble to keep them.—H. W. Head, Scarborough. *January 5th*, 1907.

Query as to the foodplant of the first brood of Eupithecia virgaureata.—It has been recorded that the larva of *Eupithecia virgaureata* also feeds on *Senecio jacobaea* and on *S. palustre*. The latter plant is in bloom in June, when *E. virgaureata* is on the wing. Perhaps the larvæ of the first brood may feed on the flowers of this plant.—M. Gillmer, 4, Elizabethstrasse, Cöthen, Anhalt, Germany. *January 20th*, 1907.

Rearing Laphygma exigua.—On August 25th, last, I took a specimen of this insect on a gas-lamp near Poole, Dorset, and two evenings later when out with Mr. W. G. Hooker, of Bournemouth, we captured a second on a lamp at the same place. As the first specimen was a female, I kept it alive, and, on the night of August 26th, it laid about 125 ova in a batch in a chip box. I kept about 75 of these, and they emerged on August 31st. The young larvæ took kindly to dock and broad-leaved plantain, and fed up rapidly and easily on the former, commencing to pupate at the end of September. Towards the end of October, the pupæ were brought into a warm room, and the perfect insects began to emerge a few days afterwards. I bred altogether 44 perfect specimens, but should probably have done better had I not been obliged to disturb the larvæ just as they were spinning up. The moths are quite handsome little insects, and much more interesting in appearance than the captured specimens which I have seen. The markings on the forewings are very rich, and vary considerably in intensity of colouring in different specimens, one or two being very dark indeed.—William J. Ogden, 1, West Bank, Stamford Hill, London, N. *February 18th*, 1907.

CURRENT NOTES.

We should be glad to hear from any one on our subscription list who has not been supplied with, and requires, vol. viii of *A Natural History of the British Lepidoptera*. It contains our account of the British Butterflies – Urbicolids and Chrysophanids—together with fourteen general chapters on "butterfly eggs" and "butterfly larvæ," and is illustrated by twenty full-page plates.

If opportunity occurs we should be very grateful for any observations on the resting-habits or orientation of the imago when settling of *Strymon* (*Thecla*) *w-album*, *S. pruni*, *Bithys quercus*, and *Ruralis betulae*, especially such as compare with Dr. Chapman and Mr. Prout's remarks (*anteà*, vol. xviii., pp. 168-9 and p. 214) on *Callophrys rubi*.

The Rev. C. R. N. Burrows would still be glad of material of *Iodis lactearia* in order to complete his life-history of the same. Also as soon as available, eggs and larvæ of *Thalera fimbrialis*. Eggs, larvæ or pupæ, should be sent to The Vicarage, Mucking, Stanford-le-Hope, Essex.

Mr. C. H. Head, whose natural history lantern slides we noticed recently, sends us some very well coloured lepidopterous larvæ, each done on an ivorine tablet, with convenience for pinning into a cabinet.

It is well-known that from 1879-1883, Mr. G. C. Champion was engaged in collecting in Central America—Guatemala and Panama. A most interesting itinerary of his travels is published in the *Ent. News*, xviii., pp. 33-44.

The Baron de Crombrugghe de Picquendæle notes (*Rev. Mens. Nam.*, vii., p. 12) the capture of the interesting parthenogenetic *Selenobia lichenella* in the Forêt de Soignes.

Mr. G. C. Champion notifies *Apion* (*Exapion*) *kiesenwetteri*, Desbr., as a British species, taken at Sandown, Isle of Wight, and Chattenden Woods in Kent, where it is not uncommon from July to September.

The Rev. H. S. Gorham adds (*Ent. Mo. Mag.*) *Oxypoda metatarsalis*, Thoms., to the British list. The specimens were obtained from the siftings from a mole's nest taken at Mathon, near West Malvern, in Herefordshire.

The same observer also writes a critical note on some species of *Laccobius*, and names *Laccobius oblongus*, a species which he discovered in Bottisham Fen, Cambridge.

Dr. Sharp describes the grouse-fly as *Ornithomyia lagopodis*, differentiating it from *Ornithomyia avicularia*, the common bird-fly. He adds that Mrs. Duff Dunbar says that "this newly-named species may be found freely in larders where freshly-killed grouse has been placed, and that after a short time they leave the birds, and may be found on the windows." All the British specimens yet seen have come from the northern half of Scotland.

SOCIETIES.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*February 18th*, 1907.—TORTRICES.—Mr. Forsyth exhibited 90 Tortricid species captured near Lancaster, including SCIAPHILA PENZIANA from Arnside, CONCHYLIS ALTERNANA, APHELIA OSSEANA, GRAPHOLITHA PENKLERIANA, and DICHRORAMPHA SATURNANA from Lancaster. TORTRIX PRONUBANA.—specimens bred from Sussex, Mr. R. Adkin.

with lichen, from Tilgate Forest, Mr. L. W. Newman. DIANTHŒCIA CARPOPHAGA.—A long varied series from the South Downs, with notes, Mr. Adkin. *March* 14*th*, 1907.—EXHIBITS.—PLUSIA BRACTEA.—A bred series from Aberdeen, and an example from Fermanagh, Mr. Newman. HADENA PROTEA.—A series from Rannoch and from South England, the former specimens being much less green and much brighter, Mr. R. Adkin. PARARGE MÆRA.—The various named forms from different continental localities, Mr. Turner, who read a note on the direction which the variation takes in this species, and pointed out an extreme form of the var. ADRASTA, taken by himself in the Pyrenees. PARARGE MÆRA.—Another series from Meiringen, including a very fine var. TRIOPS, Mr. Harrison. BOLETOBIA FULIGINARIA, GNOPHOS GLAUCINARIA, G. PULLATA, PSODOS QUADRIFARIA, P. ALPINATA, and other species taken in Switzerland by Mr. Harrison, in 1906, Mr. Turner. THAIS POLYXENA.—Living specimens from South of France, Dr. T. A. Chapman. BOARMIA REPANDATA, B. ABIETARIA, EUPITHECIA VENOSATA, and E. PULCHELLATA.—Specimens, being transition forms, between the typical forms and named varieties, Mr. B. Adkin.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March* 18*th*, 1907.—EXHIBITS.—ABERRATIONS OF ARCTIA CAIA.—(1) With yellow hindwings; (2) with nearly unicolorous chocolate forewings; (3) the usual dark markings of a dull ochreous-buff; (4) with white fringes to the forewings, and reduced dark markings [No further data given by secretaries in the report—conditions of rearing, locality, date when reared, etc., all wanting.—Ed.], Mr. B. Crabtree. PHORASPIS LEUCOGRAMMA.—A cockroach taken in the Liverpool docks, a native of Brazil, and not previously recorded as having been introduced into Europe, Mr. E. B. Sopp. TÆNIOCAMPA OPIMA.—A long and variable series of this species bred from Wallasey, some very dark forms [Which?—Ed.] are included, Mr. W. A. Tyerman. ANTHROCERA MINOS.—Specimens from Argyleshire and Wales, Mr. W. Mansbridge.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*March* 5*th*, 1907.—EXHIBITS.—NEMORIA VIRIDATA.—With microscopic slides of the larva, ovum, and pupa in illustration of his paper on the species, Rev. C. R. N. Burrows. LEIOPTILUS CARPHODACTYLA.—A species new to the British list received from Mr. Purdey of Folkestone. L. TEPHRADACTYLUS, a dark specimen. PERONEA CRISTANA, vars. GUMPIANA and SUBCAPUCINA. HASTULA HYERANA.—Preparations showing the pupal mandibles, Dr. T. A. Chapman. EMATURGA ATOMARIA.—A series including many dark brown unicolorous forms, Mr. J. A. Clark. NEMORIA VIRIDATA.—Specimens showing variation in number and intensity of the transverse white lines, Dr. G. G. C. Hodgson. NEMORIA PORRINATA, from South Europe, apparently indistinguishable from N. VIRIDATA, but said to be separable by having brown spots upon the costa, and brown forelegs, Mr. L. B. Prout. DIPHTHERA ORION.—A bred series from the New Forest, including a specimen with the brown marbling much accentuated, and the green much darker and duller than usual, Mr. P. H. Tautz. *March* 19*th*, 1907.—NEMORIA VIRIDATA.—A remarkable specimen with the cilia of all the wings deep sage-green, from the collection of Mr. Sidney Webb. EREBIA BLANDINA.—A larva hybernated in captivity, Dr. G. G. C. Hodgson. NYSSIA LAPPONARIA.—A living female, Mr. A. W. Mera. MELANIPPE PROCELLATA var. INGUINATA.—From India and Japan, Mr. L. B. Prout.

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CHANGES OF ADDRESS.—*Frank Balfour Browne, the Biological Laboratory, Larne Harbour, Co. Antrim, Ireland. E. M. Cheesman* to *1, Breinton Villas, Ryeland Street, Hereford.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W., 8 p.m. Meetings—May 1st; June 5th; October 2nd.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m., except in July and August. (No dates received.)

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m., May 6th. Field Excursions:—April 13th, Erith Marshes, 2.32 p.m., Cannon Street; May 12th, Loughton, 9.45 a.m., Liverpool Street.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m.

North London Natural History Society, The Amherst Club, Amhurst Road, N. (No notices.)

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec., H. B. Sweeting, 6, The Elms, Dingle, Liverpool.

Birmingham Entomological Society, at the rooms of the Birmingham Nat. Hist. and Philosophic Society, Avebury House, 55, Newhall Street, at 8 p.m. April 15th, June 3rd, July 1st, September 23rd, October 21st, November 18th.

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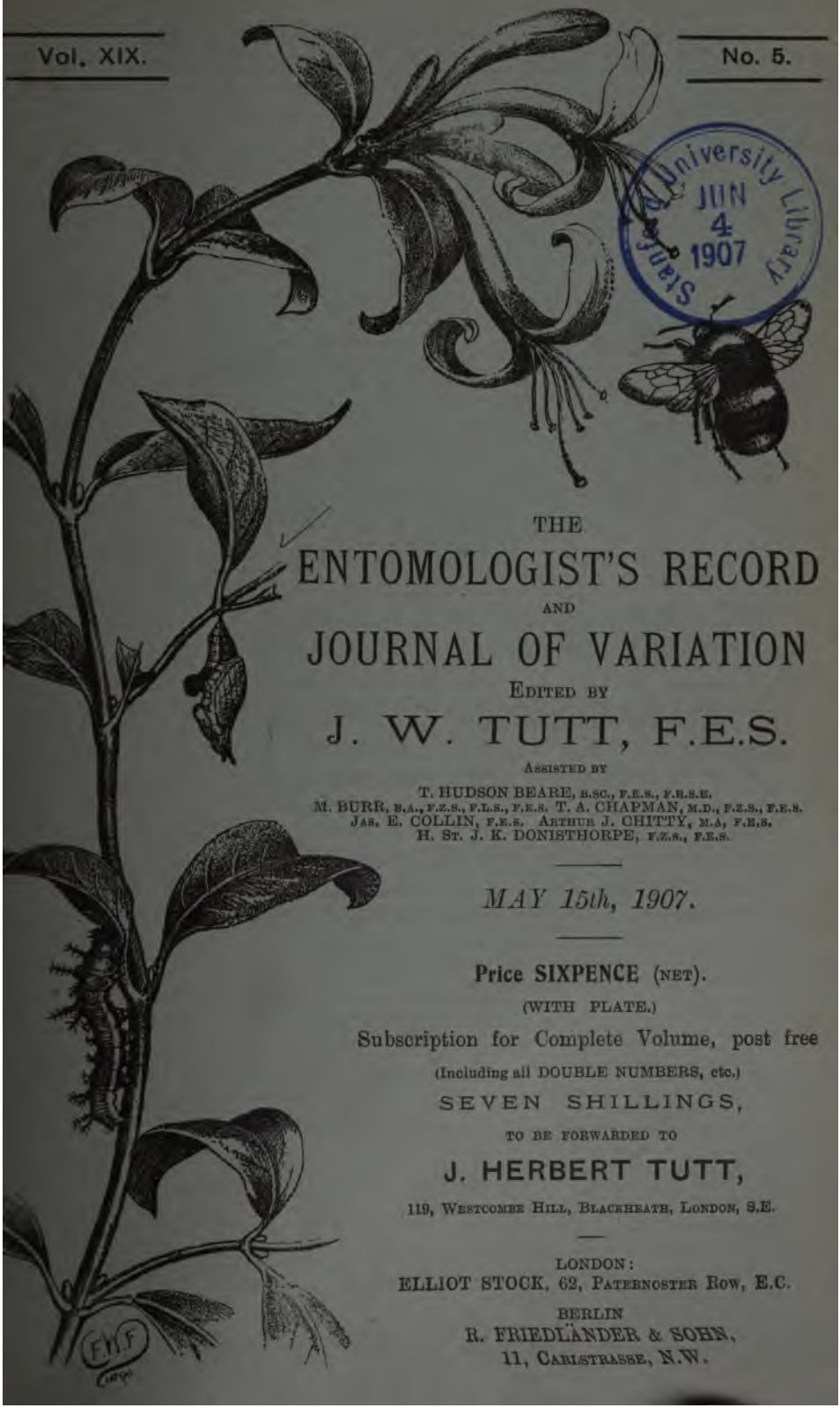
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Photo—A. Sparrow.

Mine of larva of Trochilium andrenæforme (natural size).

Trochilium andrenæforme as a British species (*with plate*).

By J. W. TUTT, F.E.S.

The Hon. N. C. Rothschild, by discovering the habits of the larva of this species in Britain, appears to have brought the possibility of possessing specimens within the reach of most British lepidopterists.

Neustetter, in July, 1896, found two newly-emerged specimens of the species on a stem of guelder-rose (*Viburnum opulus*) in a garden at Bleiberg, in Carinthia (*Jahresb. Wien. Ent. Ver.*, 1899, p. 38). In November, 1905, the Hon. N. C. Rothschild discovered a larva mining in a bush of *V. lantana*, at the edge of his garden, at Ashton Wold, in Northamptonshire, the larva pupating in due course, and a fine ♀ emerging on June 12th, 1906. In the meantime, in the winter of 1905-6, several old mines were observed in a hedge, in Surrey, from which, later, McArthur obtained two specimens, neither of which, however, produced imagines. In another part of Surrey, in 1906, Rothschild found a mined stem, which contained at the time either a fullfed larva or pupa, and from this a ♂ emerged on June 10th. McArthur then found several larvæ and pupæ in a locality in Kent, from which, however, only two imagines, a ♂ and ♀, were reared, on July 2nd and 6th respectively. Some of these larvæ went on feeding through the summer and continued into the autumn and winter, showing that the larval stage occupied at least two years—from July in one year, through the next, and until the June of the succeeding year. In November, 1906, several mines were found in *V. lantana*, and one in *V. opulus*, at Tring, in Hertfordshire.

In order to show that the mine is unlike that of any other Ægeriid known, an excellent figure is given (*Trans. Ent. Soc. Lond.*, 1906, pl. xxviii), which we have kindly been permitted to reproduce. The larva makes one straight mine along the centre of the twig or stem chosen; the opening from the mine to the outside of the stem (the opening from which the larval frass is extruded, and the insect later emerges) is almost at right angles to the mine. This opening, Rothschild says, is sometimes covered over with a cap, consisting of a thin piece of bark, quite separate from the rest of the twig or stem, which apparently remains on until the insect emerges; others have no cap, and it is possible that, in these, it has been dislodged; still others, however, have an irregular piece of bark gnawed right out, leaving the hole exposed, through which the frass of the living larva protrudes. The stems in which they have been found have varied from half-an-inch to two inches in diameter, and the larva sometimes leaves the mine to make another.

Bankes gives (*Trans. Ent. Soc. Lond.*, 1906, p. 474) an interesting account of a larva that he saw at 7 a.m., on July 28th, 1906, outside the stem, and which, being provided with a fresh stem of *V. lantana*, proceeded to gnaw an excavation in the bark and to build a circular, blister-like chamber over itself, composed of fragments of bark and gnawed wood woven together with white silk, the chamber being, some hours after, soft to the touch, projecting noticeably above the surface of the surrounding bark, the larva being entirely concealed therein. From here it started its burrow into the solid wood, the cap as it were remaining, in Bankes' opinion, as a protection to the inmate of the

burrow. Descriptions of the larva (*op. cit.*, p. 475) and of the pupa (*op. cit.*, p. 479) are given by Mr. Bankes and Dr. Chapman respectively.

Mr. Rothschild adds (*in litt.*) the following interesting details: (1) In all cases where I have found mines they face to the east. (2) The larvæ mine in the stems and twigs of the tree or bush; full-fed larvæ are sometimes in small twigs. (3) The young larvæ are also sometimes in the centre of the branch, though, no doubt for a period of their existence, some specimens seem to abide between the bark and the wood. I do not think this depends on them being quite young larvæ. (4) The larvæ are very local. I have found a single bush in a hedge, near Oundle, riddled, and several other bushes near, in the same hedge, untouched. Isolated bushes at the edge of a wood, or in a hedge, or on a hillside, are the best. If old mines be found, new ones containing larvæ are generally in the same bush. The majority of mines containing fullfed larvæ have the cap, which also appears to be carefully constructed. Young larvæ usually lack this, a kind of swelling of the bark replacing it.

We hear from Mr. Ovenden that he has already detected the larva in the Strood district, Mr. Reid has been exceptionally successful at Feering Bury, and one feels no doubt that the species is widely distributed throughout the country, wherever *Viburnum lantana* or *V. opulus* occurs at all freely.

Larval habits of Trochilium andrenæforme.

By PERCY C. REID.

I have spent several most interesting days lately searching for this larva, but I find little to add to Mr. Eustace Bankes' very complete account in the *Trans. Ent. Soc. Lond.*, 1906, pp. 474 *et seq.*

At the present date (April 1st) the larvæ vary immensely in size. Some are evidently nearly fullfed, though still feeding, others are very small, evidently in their first year, and some of them have not yet commenced to bore into the wood.

Where the ovum is placed I do not know, but, on hatching, the young larva bores into the bark, and commences to eat out a circular patch of the inner bark down to the solid wood, leaving only a thin layer of the outer bark. It also, apparently, nearly cuts through this thin layer round the circumference of its circular feeding patch.

I fancy that the larva does not, unless in very exceptional cases (of which I think I have only seen two), require more food until after the first winter than is supplied by the inner bark of the patch in which it is feeding, but, in the spring, when nearly a year old, it begins to bore into the solid wood, and, having reached the pith, mines along it in either an upwards or a downwards direction. About nine out of every ten seem to mine upwards.

The Hon. N. C. Rothschild in his paper calls attention to the peculiar circular cap with which the orifice of the mine is surmounted, and remarks that "the construction of the cap appears difficult of explanation," but, really, it seems to me that the feeding-habits of the young larva supply the explanation, for, in reality, this cap is merely the thin surface of the bark of the circular patch, where the

young larva has fed. As I have said, the circumference of this patch is cut nearly through, and, the inner bark having been eaten away, contraction takes place, which draws the cap slightly below the surface of the surrounding bark, and here it remains until displaced by some cause, or pushed away by the insect on emergence.

As a matter of fact, it is only in stout and straight wood that the cap is able to maintain its position, apparently, for, in the majority of cases that I saw, the cap was absent and the orifice of the mine open. This is often caused, I fancy, in young wood especially, by the weakening of the branch at the spot where the larva has commenced to feed. This results in the branch bending slightly towards that side, with a consequent horizontal fold in the bark on both sides of the circular patch, which displaces the cap and causes it to fall off.

The mines may be found at all heights from the ground, varying from one to six feet, and, I fancy, generally on the side of a hedge facing the sun.

The larvæ are terribly liable to be "stung," and a large majority of the mines that I opened contained either ichneumon pupæ or pupa-cases. Some mines, when opened, had evidently been vacated by the larvæ. They contained no signs of any pupa-case, and were generally comparatively short. As Mr. Bankes noticed, the larva clearly sometimes voluntarily shifts its quarters and forms a new mine.

Larval Habits of Trochilium crabroniforme.

By PERCY C. REID.

Since sending you my notes on the larvæ of *Trochilium andrenaeforme* I happened to be searching here for some larvæ of *T. crabroniforme*, and I was much interested to find three or four instances in which they, too, had a "cap" over the orifice of their mines. Of course one generally collects the larvæ of this species from the ends of cut sallow poles, and, therefore, has no occasion to notice the orifice of the mine, but it so happened with me that there were no sallow-poles handy, and I, therefore, pulled up bodily some old sallows growing along a ditch-side, and thus noticed the "caps." So far as I can see they are practically identical with those of *T. andrenaeforme*, and are evidently formed in the same way, *i.e.*, by the young larva feeding in a circular way beneath the bark; but, in this instance, the bark apparently not being so thick as that of *Viburnum lantana*, the "cap" had not become so depressed nor so distinctly defined as in those I have seen of *T. andrenaeforme*.

Some Butterflies of Èclèpens—Canton Vaud.

By FRANK G. LOWE, M.A., F.E.S.

I have been asked repeatedly, where is Èclèpens? How do you spell it? How is it pronounced? I will endeavour to reply to the first of these questions—the matter of spelling is answered at the same time—the question of pronunciation I leave to individual taste, which will not subject this classical locality to any worse treatment than other "foreign" places on the tongue of the Britisher. Èclèpens is a station on the Jura-Simplon rail, about midway between Yverdon and Lausanne, where there is a little inn, a brick-kiln, and a saw-mill.

There may be a village, but I have never discovered it. It is situated on the borders of the Swiss Jura, just where the rail, by a tunnel, passes through some low hills, which separate the valley of the Orbe from the valley of the Venoge. The hill which is thus pierced is splendid hunting-ground, traversed by rough tracks through scrub of beech and oak, between rocks and boulders. It can be reached by a path which ascends to the left of the tunnel's mouth, from the station platform. For about three-quarters of a mile on either side of the line, which runs in a valley, the ground is nearly level, the hills rise gradually, and are well clothed with woods, composed chiefly of oak and beech, with a considerable sprinkling of aspen-poplar. These woods extend for miles, and are known by various names; they are the favoured haunts of the glorious *Limenitis populi*, Apaturids, and the large Satyr—*Satyrus circe*. In 1905 and 1906 I spent several days in making expeditions to this locality, either from Lausanne or Yverdon, and captured, besides poor specimens given liberty, some fine *L. populi*, all tending towards var. *tremulae*, and about 50 Apaturids—*Apatura iris* and var. *iole*, *A. ilia* and var. *clytie* and ab. *iliades*, and about half a dozen *Satyrus circe*, but this latter was only just emerging. One day in particular, July 8th, 1905, I was fortunate enough to secure three *A.* ab. *iole*. *A. clytie*, or possibly the form here should be assigned to ab. *eos*, Rossi, was decidedly commoner than *A. ilia* type. In two instances I took interesting aberrations of *A. iris* besides those known by names. One is on the upper ab. *iole* ♂, but it is remarkable from the fact that the broad white stripe is absent from the underside as well as the upperside of the hindwings, so that the dark chocolate fascia is undivided. This is not the rule with ab. *iole*, as might be supposed. The other specimen is a typical *A. iris* ♂, on the upper side, but the white stripe is absent beneath, on left secondary, as in the former example, but typical on the right side. In 1905 *Limenitis sibylla* was everywhere, but no *L. camilla*. I found that it was regarded as a fact that *L. camilla* did not occur in this district, and as such I accepted it, but, in 1906, I took *L. camilla*, three ♂s and two ♀s, within a mile of Èclèpens station. On June 22nd, in this same year, *Thecla pruni* was common, and a week later *Thecla acaciae*, but both, apparently, in restricted quarters. *T. pruni* is, I believe, new to the list of this locality. On July 2nd, by an idle stroke at *Argynnis adippe*, flying overhead, I obtained a fine specimen of ab. *cleodoxa*, which Mr. Fison, perhaps the best authority in such matters, says is the only specimen he has heard of in Switzerland; though, of course, the variety is common on the Italian side of the Simplon. *Parnassius apollo* var. *pseudonomion* is remarkably fine in this locality. One freshly emerged *Coenonympha pamphilus* presented an interesting case of exceptionally rich coloration, being slightly suffused with a distinct purplish tinge on the upperside, and, on the underside, the forewings are a rich tawny-red, like *Melitaea didyma*. I have given the title *rubescens* to this specimen in my cabinet. The following list of butterflies, taken and observed on odd days, in these two years, ranging from June 16th to July 8th, is far from complete:—*Parnassius apollo*, *Aporia crataegi*, *Pieris brassicae*, *P. rapae*, *P. napi*, *Euchloë cardamines*, *Colias hyale*, *Gonepteryx rhamni*, *Leptidia sinapis*. Theclids, *Strymon w-album*, *S. ilicis*, *S. acaciae* (all common), *S. pruni*, *Callophrys rubi*, *Chrysophanus phlaeas* ab. *suffusa*, *Rusticus argyrognomon*, *Cyaniris*

argiolus, *Nomiades semiargus*, *Nemeobius lucina*, *Apatura iris* and ab. *iole*, *A. ilia* and ab. *eos* and ab. *iliades*, *Limenitis camilla*, *L. sibylla*, *L. populi*, *Polygonia c-album*, *Eugonia polychloros*, *Aglais urticae*, *Vanessa io*, *Euvanessa antiopa*, *Pyrameis cardui*, *Melitaea didyma*, *M. dictynna*, *M. athalia*, *M. parthenie*, *Brenthis dia*, *Issoria latona*, *Argynnis niobe* ab. *eris*, *A. adippe* and ab. *cleodoxa*, *Dryas paphia*, *Melanargia galathea*, *Satyrus hermione*, *S. circe*, *Hipparchia semele*, *Pararge maera*, *P. egeria* var. *egerides*, *P. achine* (very common), *Epinephele ianira*, *E. tithonus*, *Enodia hyperanthus*, *Coenonympha arcania*, *C. pamphilus*, *Hesperia carthami*, *Adopaea flava* (*thaumas*), *Augiades sylvanus*, *Cyclopides palaemon* (one, June 18th, 1906). Of noticeable Geometrids, *Thalera fimbrialis*, *Larentia hydrata* (one each). On my way to Switzerland, *viâ* Bäle, I turned off to Friborg-in-Baden, and made my first acquaintance with *Melitaea maturna*, typieal form, just out, June 8th, and *Coenonympha hero*, very worn and nearly over.

Notes on the hybernating habits, etc., of Pyrameis atalanta.

By Paymaster-in-Chief GERVASE F. MATHEW, R.N.

In the February number of the *Ent. Record*, p. 47, Mr. H. W. Head raises the question as to whether *Pyrameis atalanta* hybernates in this country, and gives it as his opinion that it does not, and asks if there is any authentic record of its doing so. I think this query will come rather as a surprise to many, who, like myself, have always considered this insect as one of our ordinary hybernating species. As far as my personal experience goes, I can recollect seeing it on three or four occasions in mid-winter—(1) one was found hybernating in a broken flower-pot in an out-house; (2) another was found lying on the ground under a wall, from whence some thick ivy had just been stripped; (3) another was seen fluttering about the window of a harness-room, on a bright warm day in January or February; and (4) one was found lying on a pathway, having evidently been recently disturbed from its winter quarters. Unfortunately I have not the dates of the above instances, as they occurred many years before I kept a journal, but there is no doubt that the facts were as stated. Since then I have frequently seen the butterfly in May—possibly earlier—and early June, and have looked on these as hybernated examples. But I have always had an idea that *P. atalanta* was the last of the Vanessids to go into hybernation, and the last to appear the following spring, and I think it is now pretty generally believed that all the British species hybernate in the perfect state, and that impregnation takes place in the spring. Many of them go into hybernation soon after assuming the perfect state, and are seldom seen in the autumn. *P. atalanta* appears to linger the longest, and is often seen enjoying the sweets of ivy bloom, on bright days, late in October, or even to the beginning of November, but it takes a longer sleep than the others, and does not reappear until well into May, or the beginning of June.

Some entomologists seem to think that in certain seasons this butterfly is double-brooded, but I fancy this is a mistake caused by the fact that it is a long-lived species, and females deposit their ova from June until August, so that the offspring of the same parent may be living as larvæ, pupæ, or even imagines, at the same time. I remem-

ber that, during one summer, a very ragged female haunted the side of a wood for many weeks.

On looking through what few works I have on British butterflies, and various magazines, I find very little is said about the hybernating habits of this species, but most of the authors appear to assume that it does. Perhaps it would be interesting to give some extracts.

(1) Rennie, in his *Conspectus of Butterflies and Moths found in Britain*, published in 1832, says, at p. 10, "appears in spring, the middle of July, and the beginning of August, until November." He calls it the "Alderman," *Ammiralis atalanta*, Rennie.

(2) Stainton says nothing about the hybernation of *P. atalanta*, but, on the contrary, he seems to assume that it does not do so. At p. 22, vol. i., he remarks, "of this family (*Nymphalidae*) the first that greets us in the spring are the hybernating *Vanessae—io*, *polychloros*, and *urticae* (which we find in lanes, in gardens, and not unfrequently in houses); and even *antiopa*, when it does appear, may be found in April . . . In August . . . *Vanessa atalanta* begins to join its congeners at sucking sweets from the flowers and fruits of our gardens." And after his description of the species follows the date of appearance—"viii-x*b*." But for *io* he gives, "iii*h*.-v*h*., viii-ix"; *polychloros*, "iii*h*.-v*h*., vii*e*.-viii*e*."; and *urticae*, "iii*h*.-v*h*., vi-ix."

(3) Newman, in *British Butterflies*, p. 63, says, "both sexes hybernate early; they reappear in the spring, but later than our other *Vanessidae;* the usual intercourse then takes place, and oviposition follows."

(4) Lang, in *Butterflies of Europe*, p. 177, "Times of appearance.—June to October, and after hybernation in the spring."

(5) Kane, in *Handbook of European Butterflies*, does not allude to the hybernating habits of any of the *Nymphalidae*, except in the case of *urticae*, where, at p. 61, he mentions that "the pale costal blotches of fore- and hindwings are much bleached in hybernated specimens."

(6) Meyrick, *Handbook of British Lepidoptera*, assumes that it hybernates, as he gives "9-6" for its time of appearance.

(7) Barrett, in *The Lepidoptera of the British Islands*, vol. i., at p. 147, for time of appearance gives, "September and October, and, after hybernation, in June," and at p. 148 he writes, "It is quite the latest species, with us, to retire for hybernation. I have seen it upon the wing until the end of October, and even into November—though this is exceptional—and, on the other hand, it is the last to reappear; hot weather late in May will sometimes bring it out, but, as a general rule, it is not to be seen until June. It has then lost its familiarity and fondness for gardens, and usually frequents trees; but, before the end of the month its eggs are deposited and its life is over. Although so common, its favourite places of hybernation seem to be almost unknown or unnoticed."

(8) South, *Complete Pocket Guide, Wayside and Woodland Series*, at p. 83, says, "The butterflies seen in spring, early summer, up to, say, the beginning of July, are supposed to have wintered in this country, but there is no positive evidence, that I can find, that the butterfly does hybernate here. It is, however, most probable that they are arrivals from abroad. The species is found throughout Europe and North Africa, northern Asia, and North America, and it may be suspected of migration, although there is, perhaps, not such conclu-

sive evidence on this point as in the case of its cousin, the Painted Lady."

(9) Dale, *British Butterflies*, p. 149, writes, "It remains on the wing till the beginning of November, so long as the ivy is in bloom and the frosts not too severe, when it hybernates. It does not emerge from its winter-quarters as early as other hybernating species, and is very seldom seen."

(10) In the *Entomologist's Weekly Intelligencer*, no. 243, for June 1st, 1861, attention is called to a paper by Herr von Prittwitz, in a recent number of the *Stettin. Entomologische Zeitung*, on the winter forms of Silesian Rhopalocera, in which it is stated that (1) *atalanta*, *antiopa*, and *urticae* pass the winter in the imago state, and (2) that *cardui*, *io*, *c-album*, and *polychloros* pass the winter both in the imago and pupa states; but the author did not appear to have had a very correct knowledge of how many species passed the winter, for he included *Argynnis adippe* and *Nemeobius lucina* among those species that hybernate as larvæ, whereas it is now well known that the former passes winter in the ova and the latter in the pupa state.

(11) *Entomologist's Monthly Magazine*, vol. 26, for 1890. At pp. 185-6, Dr. R. C. R. Jordan, in a paper on the British Macro-Lepidoptera which hybernate in the perfect state, includes *P. atalanta*, but does not say very much about it. He remarks that *P. atalanta* and *P. cardui*, though undoubtedly living through the winter, are never found in any numbers after this time, however abundant they may have been in the October previous." In the same magazine, vol. xxix., p. 261, Mr. C. W. Dale, of Glanvilles Wootton, Dorset, notes having seen "several hybernated specimens on the wing during April and May." In vol. xxxviii., p. 62, Mr. W. T. Page notes having seen *atalanta* as late as December 3rd, and adds that he has records of having seen it in October, November, December, January, and February.

(12) *Entomologist*, vol. viii. Mr. W. A. Luff records that, on March 6th of that year, Mrs. Boley found several small larvæ spun up in nettles in a lane in Guernsey. These fed up and produced butterflies in May. In vol. xxiii., p. 257, Mr. Frohawk says, "the hybernated specimens deposit eggs in May and June. In vol. xxxiii., p. 351, Mr. C. W. Dale gives March 29th, 1819, for early, and November 18th for late, appearance of this species.

(13) *Entomologist's Record*, vol. iv., 1893, p. 152, Mr. B. S. Harwood records a capture of *atalanta* on April 26th. Ditto, ditto, p. 170, Mr. Tutt says, "*atalanta* is to be seen every year, in greater or less numbers, from March to June, sometimes as late as July." At p. 180, Miss Hinchliff records the capture of one at Instow, North Devon, on April 23rd. In vol. v., 1894, p. 24, "Current Notes.—Larvæ (of *atalanta*) received from Skibbereen, Co. Cork, on January 11th. Rather (very) unusual." In vol. vii., 1895-6, p. 4, Mr. J. W. Tutt writes, "*atalanta* does not go into hybernation until the ivy nectar fails." In vol. viii., 1896, p. 4, Mr. Wolfe notes that he obtained very young larvæ up to the end of October, and bred the imagines (in doors) in January and February, and suggests that pupæ and larvæ out-of-doors would be killed by the first frosts. At p. 100, Mr. J. W. Tutt, in a paper on the "Hybernating stages of British Butterflies," says (of *atalanta*) it hybernates in the perfect state. At p. 169, Mr. F. Merrifield agrees with Mr. Tutt that *atalanta* cannot hybernate as

pupæ in England, his reason being that he never found they could survive a long exposure to winter temperature. In vol. ix., 1897, pp. 249-51, in a paper "On a collection of Spring Lepidoptera made in the Riviera, etc.," Mr. J. W. Tutt notices, on the authority of Dr. Chapman, the occurrence of *atalanta* in February, and further quotes Chapman as saying that, at Cannes, "during last winter *P. atalanta* was always in evidence, the same individuals at the same places (apparently, and probably really) all the winter, the imagines not emerging or ovipositing, as far as one could judge, but hybernating without hiding away, except on dull and cold days." In this paper Mr. Tutt remarks, "It is well known that the imago of this species never goes into hybernation in the autumn, in Britain, until obliged, feasting first on the hop catkins and later on ivy bloom." In vol. xi., 1899, p. 79, Dr. Chapman remarks that, in February, 1899, in the Riviera, of hybernating butterflies *atalanta* was much the most abundant; and (p. 97) on March 6th he found a full-grown larva. In vol. xii., 1900, p. 53, Mr. J. Mason notes having seen *atalanta* flying about in the bright sun on January 9th, at Clevedon Court, Somersetshire.

(14) Buckler's *Larvæ of British Butterflies and Moths*, vol. i., p. 176, the Rev. John Hellins writes, "I have not many records of this species; perhaps one of the most pleasant entomological memories is that of seeing the butterfly (*atalanta*) in good condition, flying about during a gleam of sunshine on the morning of Christmas Day, 1866; at last it settled on a child's shoulder, and was an object of admiration for some time."

With regard to the question as to whether pairing takes place before or after hybernation, I have seen it stated that females of Vanessids captured in the autumn, and dissected, show no trace of ova, or ova only slightly developed, but I have no personal knowledge of the subject. Boisduval says that impregnation takes place in the spring, but there seems to be a difference of opinion on this point. I once saw a pair of *Pyrameis cardui, in cop.*, at Gibraltar, on April 20th.

In very hot and dry localities in the Mediterranean, such as Malta, Gibraltar, etc., where, during the summer months, the foodplant of *atalanta* is practically burnt up, the imagines appear to æstivate, but towards the end of September or beginning of October the weather becomes cooler, the rains commence, and the nettles soon spring up, and then *atalanta* busies itself ovipositing, and, as I have before mentioned, being a long-lived species, larvæ of all sizes, and pupæ, are to be found among the food-plants, and freshly-hatched imagines begin to emerge in November.

At Alexandria, on February 8th, 1898, I found a full-grown larva spun up and preparing to pupate in a bed of nettles, other larvæ of various sizes, and a fresh imago. The larva found on the above date, produced a fine butterfly on the 28th of the same month.

From the above I think it is pretty clear that this species does hybernate in this country.

Larvæ of Polyommatus icarus and their connection with ants.

By A. L. RAYWARD, F.E.S.

It is, I think, not very generally known that the larva of our common blue butterfly, *Polyommatus icarus*, like those of at least three other species of our British Lycænids, is possessed of a gland which

secretes a fluid very attractive to ants; in the hope, therefore, that they may be of interest, I give some particulars of an experiment conducted by me a few days ago with two larvæ of *icarus* and a worker ant of the species *Formica flava*, which not only proved the existence in these larvæ of a highly-developed secretory gland, but also showed a high order of instinct, or intelligence, in the ant.

The larvæ experimented with were reared from ova deposited, in confinement, on *Lotus corniculatus*, by a ♀ taken by me at Folkestone in August, 1906; the ova hatched on the 26th and succeeding days of the same month, and the larvæ, after growing satisfactorily for three or four weeks, ceased feeding, and laid up for hybernation about September 21st.

They were wintered on a growing plant of *Lotus corniculatus* in the open, and, during the second week of March of this year, some of the survivors were removed to a warm room and placed upon cut sprigs of *Trifolium repens*; this food they commenced to eat during the following week, and one of them moulted on March 26th. An examination of this freshly moulted larva revealed the fact that it possessed a long, narrow, transverse gland on the dorsum of the 7th abdominal segment, similar to that possessed by the larvæ of our British Lycænids—*arion*, *corydon*, and *bellargus*—and as, in addition, the two conspicuous whitish evaginable tubes on the next following—*i.e.*, the 8th—segment, carried by both *corydon* and *bellargus*, were also present, it appeared probable that *icarus* might, like its allies, have some connection with ants. As soon as opportunity offered, therefore, I put the matter to the test, and was soon satisfied that *icarus* is endowed with a gland which yields a fluid probably similar in character to, and equally attractive to *Formica flava* as, that produced by *arion*, *corydon*, and *bellargus*.

The demonstration was obtained in the following manner:—The larger and more vigorous-looking of the two larvæ employed, was first placed upon the stage of a small dissecting microscope carrying a lens giving a magnification of 16, and an ant was then persuaded to walk upon the stage from a pill-box by means of a camel-hair brush. The ant appeared somewhat sluggish, and at first evinced no interest in the larva, but, after a few moments, walked slowly over its back, and proceeded to clean itself, and particularly its antennæ, very thoroughly. This operation lasted some four or five minutes, and, during its continuance, the larva remained perfectly quiescent, showing no sign whatever of irritation or resentment at the presence of the ant, and careful examination of the gland and evaginable tubes disclosed no sign of movement in these organs, so that I began to fear that the gland might prove, after all, to be a "blind" one, or at least imperfectly developed. Suddenly, however, after having completed a most elaborate "toilet," including the careful cleaning of its antennæ by passing them many times between the prothoracic legs, the ant ran straight to the gland, and, in the most methodical and business-like manner, began to caress it with the antennæ, evidently well aware of the delectable drink waiting to be yielded for the asking, yet the result for several minutes longer continued disappointing, for, although the gland showed some slight sign of contraction, followed by distention, there was no indication of the protrusion of the inner membrane, which always precedes the flow of fluid in *corydon* and *bellargus*.

Still the ant persisted in its coaxings and caresses, and, at length, the evaginable tubes on the 8th segment showed signs of activity, first one, then the other, and presently both together, being evaginated and withdrawn, the time occupied by the double movement of protrusion and retraction being probably less than one second. The ant took little notice of the activity of these tubes, but continued its entreaties at the gland, and, at last, with the desired result, for the greenish inner membrane was slowly protruded, and a bead of viscous-looking fluid was extruded, and was quickly and most eagerly absorbed by the ant. The time occupied by the protrusion of the gland and emission of the fluid, was perhaps three seconds, and about twice that length of time was taken by the ant in drinking the bead of liquid. Four times, in the hour covered by this experiment, did the ant succeed in inducing the larva to yield the fluid, but only after the most persistent and continuous coaxing was success attained, and I do not think the larva yielded voluntarily to the ant's solicitations. The evaginable tubes were most active just before the exclusion of the liquid, and, at the times of their evagination, there was a corresponding pulsation of the lips of the gland; it appeared to me that the action of the tubes was intended to cause the ant to desist from its excitation of the gland, and that, having failed in inducing it to refrain for more than a moment from its labours, the protrusion of the membrane and emission of the fluid were spasmodic and involuntary. The tubes are white, and have, at their apex, a number of filaments or tentacles, but the evagination and retraction were so quickly effected that I was unable to ascertain their number. The second larva subsequently gave a successful demonstration also, and the most interesting feature of the whole experiment appeared to me to be the patient, persistent manner in which the ant continued its caressings, as if it were perfectly well acquainted with the method to be employed, and absolutely assured of the successful issue of its labours. There was at no time any excited running over the body of the larva by the ant, such as was the case in my experiments with *corydon* and *bellargus* last year; it remained for nearly an hour on the posterior half of the larva, and, for several minutes after each successful termination to its entreaties, devoted itself to combing and stroking its antennæ, as though well aware that the larva required time to recover from the treatment to which it had been subjected.

It had been my intention to experiment with these larvæ of *icarus* before hybernation, with the object of ascertaining if any connection existed between this species and ants, but want of leisure prevented my doing so, and I am therefore unable to say whether or not they possess a functional gland in the earlier stages of their life-history. While my observations of the larvæ of *icarus* have, so far, unfortunately been restricted to those reared in confinement, and I cannot, therefore, state positively that they are attended by ants under natural conditions, there can, I think, be very little doubt that they are, occasionally at least, so attended, as the low-feeding habits of the species must certainly frequently bring them into contact with ants, and the functional development of the gland would appear to show that it is not long allowed to remain unemployed.

An afternoon at Hyères.—Note on Sesia stellatarum.—Lepidopterological Notes.

By T. A. CHAPMAN, M.D., F.Z.S., F.E.S.

Leaving England in perfect weather on March 22nd, I found, on the 23rd, that equally fine conditions prevailed at Hyères. There was, nevertheless, a striking difference in the brilliance of the light, and consequent brightness of everything in the south, although the atmosphere was not particularly clear, but very calm. My baggage having chosen to take some longer route, I took a walk in the afternoon without even a pillbox. Butterflies were plentiful enough, but not numerous, in species—*Aglais urticae* and *Pyrameis atalanta*, *Pararge egeria*, *Colias edusa*, *Pieris brassicae* and *P. rapae*, *Gonepteryx cleopatra* in some numbers; by the way, I saw a *G. rhamni* on the wing at Reigate on the 21st.

Sesia stellatarum was in considerable force, four or five being often in sight at once. I suppose I have, however, often seen them as abundantly. I made, however, one observation that was quite new to me, *viz.*, I met with a pair of this species. Mr. Powell tells me he has never seen a pair. I imagine something must have disturbed them, they were about as difficult to approach as a solitary specimen, taking the wing again as one approached. They settled, however, more readily than a solitary specimen, so that I was always able to find them, even though it was over a fence, or the other side of a bush. Having no net, I despaired of taking them, but as the sun was declining, I persevered, and finally, by allowing them to rest undisturbed for some time, succeeded in placing my hand over them. I wished to make the capture in order to ascertain which of the two led in their flight, and found it was the ♀, who also settled head upwards. In flying both vibrated their wings, so far as one could see, equally, but they went along only less vigorously than one specimen alone does, and with the ♀ always leading. I distinguished the two insects, as one was faded a good deal paler than the other, though not till I captured them did I know that the pale one that led was the ♀. They remained paired till I had captured them, and even after I had killed them by pressure, but separated on the way home.

Mr. Raine tells me that things are very backward, and, owing to drought for more than a month, are growing very little, as I could verify by the asphodels, which are not a foot high, although showing flower-stems some six or eight inches high; last year they were coming into flower at this time, and in full bloom a fortnight later.

March 25th.—The season is certainly very backward. The heath and the lavender (*L. staechus*) are not yet in flower. *Thestor ballus* has not been seen, two or three *Thais polyxena* (*cassandra*) have, however, been observed, and two *Anthocaris belia*. *Euvanessa antiopa* and *Eugonia polychloros* are more frequent than I have sometimes noticed, and a few *Callophrys rubi* are already on the wing. *P. megaera* (very fresh) are also on the wing on a few warm banks. *Polygonia c-album* may be seen along the hedgerows by the wayside down on the plain. Last year, certain wild pear-tree shrubs had several nests of *Aporia crataegi* larvæ. This year they have none, but curiously, a bush of *Prunus spinosus* (sloe) close by, has a nest with half-a-dozen larvæ, not yet half-an-inch long. Blackthorn is not, so far as I have observed,

nearly so favourite a foodplant of *A. crataegi* as the various pomaceous *Rosaceae* (*Pyrus*, *Crataegus*, etc.). I have, however, seen none on any pear-trees, some nests on one turned out to be *Porthesia chrysorrhoea*. A little amelanchier tree, a tree not very common here, of which the buds were just beginning to break, had a number of nests with larvæ not half-an-inch long, so many that the survival of any considerable proportion of them must tend to their general starvation. I also found half-a-dozen larvæ of *Crinopteryx familiella* at a spot where they had obviously been fairly numerous very recently. It would usually be difficult to find one after the middle of February.

March 26th.—I have been noting the conditions of existence of *Lozopera deaurana*. It is really scarce, as it is difficult to find the dead stems of *Smyrnium* in which the pupæ are. The plant is abundant enough, but the dead plants appear to be such ideal firelighting material, that they are very strictly collected for that purpose, and not one in a hundred that the growing plants declare must have existed can be found. It is astonishing that the species can survive when so large a holocaust is annually levied. One would hardly expect the few moths that came through could lay eggs enough to supply all the plants with larvæ, yet this must nearly be so, as almost all suitable stems that remain contain pupæ, though certainly not always. The human element of destruction is, no doubt, also helpful in making the plant grow, as it seems to affect human vicinity. A small ant is also destructive, using the holes of the larvæ to reach the hollows of the stems, probably, however, they are most destructive to larvæ whose habitations are defective and these are usually, more often than not, ichneumoned. The ant may then be, after all, more helpful than destructive. It may be remembered that the use of the stems as firewood was extremely destructive to this species at the Ile Ste. Marguerite, near Cannes.

Rare and local species of Coleoptera taken in Cumberland.

By H. BRITTEN.

The following species taken in Cumberland are described as very rare by Fowler in his *British Coleoptera*, or as not occurring in the north of England :—*Notiophilus quadriguttatus*, Dej., one specimen with two pores on the left elytron and only one on the right; *Dyschirius politus*, Dej., one specimen in Baron Wood, May 21st, 1902; *Miscodera arctica*, Payk., local on Wan Fell and Cross Fell, beneath stones; *Pterostichus lepidus*, F., very local, on Wan Fell; *Amara patricia*, Duft., one specimen on Wan Fell; *Bembidium nigricorne*, Gyll., abundant on sheep tracks on heaths, Wan Fell and Cumrew Fell; *Trechus discus*, F., two specimens taken on the banks of the Eden, August 2nd, 1900; *Hydroporus incognitus*, Sharp, very local in one mossy hole on Wan Fell, abundant March 23rd, 1902; *H. ferrugineus*, Steph., taken in a drain, Great Salkeld, May 19th, 1901, specimens are taken nearly every year at the mouth of this drain; *H. obsoletus*, Aubé., rare in flood refuse, Great Salkeld; *Platambus maculatus*, L., ab. *immaculatus*, Donis., abundant in Lake Ulleswater, unaccompanied by the type; *Hydrobius fuscipes*, L., var. *aeneus*, Sol., three specimens taken at Burgh-on-Sands, April 5th, 1902; *Aleochara cuniculorum*, Kraatz., common in rabbit-burrows;

A. villosa, Mann., three specimens in a stable yard, Great Salkeld; *Microglossa suturalis*, Mann., abundant in barns and cow-houses, Great Salkeld; *Oxypoda vittata*, Maerk., scarce in haystack refuse, Great Salkeld; *O. tarda*, Sharp, abundant on a sandbank near Great Salkeld, April 9th, 1903; *Calodera umbrosa*, Er., one specimen at roots of rushes, Great Salkeld, May 7th, 1903; *Dinarda maerkeli*, Kies., one specimen with *Formica rufa*, Keswick, April 13th, 1906; *Nototheeta flavipes*, Grav., common with *Formica rufa*, Keswick, April 13th, 1906; *N. anceps*, Er., three specimens with *Formica rufa*, Keswick, April 13th, 1906; *Homalota longula*, Heer, common amongst shingle on the banks of the Eden, Great Salkeld; *H. subtillissima*, K., abundant beneath stones on damp shingle, banks of Eden, Great Salkeld; *H. angustula*, Gyll., on muddy margins of the river Eden, Great Salkeld; *H. cuspidata*, Er., common beneath bark of elm, ash, and fir trees, Great Salkeld; *H. cavifrons*, Sharp, local, at roots of grass and in moss, Great Salkeld; *H. pallens*, Redt., common beneath stones on damp shingle, banks of Eden, Great Salkeld; *H. parallela*, Mann., abundant in nests of *Formica rufa*, Keswick, April 13th, 1906; *H. hepatica*, Er., rare, a fine ♂, sweeping at Cumrew, June 2nd, 1903; *H. coriaria*, Kr., not common in birds' nest, Great Salkeld; *H. autumnalis*, Er., two ♂s on banks of a pond, Edenhall, May 13th, 1906; *H. mortuorum*, Thoms., is abundant in carrion, dead leaves, decaying vegetable matter, etc., in this district; *Ischnopoda caerulea*, Sahl., not uncommon on the banks of the Eden, Great Salkeld; *Falagria sulcatula*, Gr., scarce in flood refuse in Baron Wood, January 30th, 1903; *Placusa complanata*, Er., abundant in the galleries of *Hylophilus piniperda*, L., on Scotch fir, this is a very local insect, and I only find it in one small wood near Great Salkeld; *Epipeda plana*, Gyll., scarce under bark of dead elm; *Hygronoma dimidiata*, Gr., scarce, sweeping rushes and sedges in a bog; *Hetherothops praevia*, Er., taken in a cowshed amongst decaying straw, Great Salkeld; *Oligota atomaria*, Er., rare, one specimen at grass roots, Great Salkeld, April 3rd, 1905; *Quedius longicornis*, Kr., rare, one specimen in flood refuse, one specimen from a rabbit burrow, and one specimen from a mole's run, Great Salkeld; *Quedius vexans*, Epp., from moles' nests, Great Salkeld, November 21st, 1906; *Quedius scitus*, Gr., one specimen in a rotten fir log, Edenhall, January 13th, 1907; *Q. obliteratus*, Er., one specimen in moss, Silloth, September 20th, 1905; *Lathrobium terminatum*, Grav., var. *immaculatum*, Fow., not uncommon in a bog near Great Salkeld, the type is not found in this district; *Medon obsoletus*, Nord., one specimen in vegetable refuse; *Stenus argus*, Grav., abundant in a marsh near Penrith; *S. aerosus*, Er.; *S. annulatus*, Crotch, scarce in moss, Wan Fell; *S. niveus*, Fauv., abundant sweeping in marshes; *Trogophloeus rivularis*, Mots., scarce on the muddy margins of ponds and streams; *Olophrum fuscum*, Grav., in moss and at the roots of rushes, not uncommon; *Homalium septentrionis*, Thoms., common in dead rabbits; *H. caesum*, Gr., var. *tricolor*, Rey., two specimens in dead leaves; *H. gracilicorne*, Fairm., scarce beneath dead fir bark, also under birch bark and in fungi on birch; *Hapalaraea pygmaea*, Pk., one specimen in a fungus on an ash-tree; *Agathidium seminulum*, L., two specimens in rotten wood; *Hydnobius punctatissimus*, Steph., one specimen in flood refuse; *Triarthron maerkeli*, Schm., one specimen in flood refuse; *Cholera*

intermedia, Kr., in rabbit burrows; *Colon dentipes*, Sahlb., one specimen at rest on a fence post; *Neuraphes angulatus*, Müll., one specimen in moss; *N. rubicundus*, Shm., one specimen in rotten wood; *N. sparshalli*, Den., one specimen in rotten wood; *N.* var. *minutus*, Chand., four specimens in haystack refuse; *Pselaphus dresdensis*, Hbst., abundant in moss, but very local; *Tychus niger*, Payk., not uncommon in rotten wood, amongst moss, and in dead leaves; *Bythinus palidus*, Aub., locally abundant in moss and in grass roots; *Euplectus sanguineus*, Den., in decaying straw, scarce; *E. piceus*, Mots., in rotten wood, moderately common; *E. ambiguus*, Reich., abundant by sweeping in a swamp and also in moss in marshy places; *E. minutissimus*, Aub., one specimen under a stone embedded in damp sand in company with *Homalota subtillissima*, *pallens*, and *Thinobius linearis*, April 6th, 1906, this was previous to J. J. Walker noting this species; *Ptinella aptera*, Guer., beneath bark on a dead ash-tree; *Tricopteryx bovina*, Mots., common in old dry horse- and cow-dung; *Orthoperus atomus*, Gyll., local but not uncommon in refuse in hedge bottoms; *Olibrus aeneus*, F., one specimen on carrion, a very strange place to find this species, this is the only record for the county; *Halyzia* 16-*guttata*, L., one specimen in flood refuse; *Scymnus haemorrhoidalis*, Hbst., several specimens from flood refuse and sweeping beneath hedges; *Chilocorus similis*, Ross., one specimen by beating willow bushes; *C. bipustulatus*, L., not uncommon by beating willow bushes on heaths; *Alexia pilifera*, Müll., locally abundant in moss in fir woods; *Hister bissexstriatus*, F., one specimen in carrion; *Hister* 12-*striatus*, Schl., in carrion, not common; *Pachylopus maritimus*, Steph., common in dung and carrion in the Solway district; *Acritus minutus*, Hbst., in decaying straw at Silloth, in numbers; *Meligethes viduatus*, Stm., a rare find amongst the flowers of *Geum rivale*; *Monotoma conicicollis*, Aub., common in nests of *Formica rufa* at Keswick; *Enicmus testaceus*, Steph., scarce in fungi on alder; I believe Mr. Day has recorded my supposed capture of *E. rugosus*, Herbst, this record will have to be deleted in favour of a new British species which is in hand at the present time, and will be duly recorded in the *Ent. Mo. Mag.*; *Cartodere ruficollis*, Marsh., very common in haystack refuse in this district; *C. filiformis*, Gyll., two specimens taken in my house during 1906; *Telmatophilus caricis*, Ol., common, sweeping amongst *Sparganium*; *Cryptophagus lycoperdi*, Hbst., in a small puff-ball in Baron Wood; *Atomaria diluta*, Er., in flood refuse, scarce; *Mycetophagus atomarius*, F., one specimen in fungus; *Tiresias serra*, F., under bark, not common; *Florilinus musaeorum*, L., abundant on the walls of my house and in flowers; *Aspidiphorus orbiculatus*, Gyll., scarce in fungi on old stumps; *Geotrupes typhaeus*, L., abundant on sandy heaths; *Malthodes pellucidus*, Kies, abundant by beating and sweeping; *Phlaeophilus edwardsi*, Steph., common on fence posts round a wood during the autumn and winter months; *Ptinus subpilosus*, Müll., rare, beneath the bark of a sycamore tree; *Hedobia imperialis*, L., bred from white cocoons taken beneath bark on dead crab stumps in hedges; *Dryophilus pusillus*, Gyll., abundant on larch trees; *Anobium paniceum*, L., bred in numbers amongst garden seeds; *Cis micans*, F., in fungi on beech; *C. hispidus*, Payk., in fungi on ash; *C. lineatocribratus*, Mel., in fungi on birch; *Asemum striatum*, L., abundant in stumps of Scotch fir; *Donacia obscura*, Gyll., by sweeping amongst *Carex* in May; *D. affinis*, Kunz., by sweeping

in a marshy place amongst rushes, *Carex* and *Scirpus*; *Chrysomela varians*, Schal., breeds yearly on a patch of *Hypericum perforatum*; *Clinocara undulata*, Kr., abundant beneath bark on fallen oak branches; *Salpingus aeratus*, Muls., flying round heaps of dead branches and also beaten in some numbers from dead whitethorn branches; *S. foveolatus*, Ljun., taken in some numbers on fence posts during the winter months; *Oedemera lurida*, Marsh., one specimen by sweeping; *Meloë proscarabaeus*, L., var *cyaneus*, Muls., not uncommon with the type; *Apion pallipes*, Kirb., by sweeping *Allium ursinum* when in flower; *A. confluens*, Kirb., on *Matricaria inodora*; *Apion tenue*, Kirb., scarce, by general sweeping; *Trachyphlaeus aristatus*, Gyll., scarce at roots of grass but widely distributed; *Orthochaetes setiger*, Beck., scarce in moss and at grass roots; *Erirhinus aethiops*, F., one specimen in flood refuse in Borrowdale; *Bagous claudicans*, Boh., in refuse on edge of a pond; *Poophagus nasturtii*, Germ., local and scarce on *Nasturtium officinale*; *Ceuthorhynchidius nigrinus*, Marsh., scarce, by beating sallows; *C. posthumus*, Germ., common on its foodplant, *Tesdalia*, when in flower; *Eubrychius velatus*, Beck., in refuse on margin of a pond, and by fishing amongst *Myriophyllium* in the pond in company with the following species; *Litodactylus leucogaster*, Marsh., abundant in refuse on banks of the pond and on submerged logs, and by fishing amongst *Myriophyllium* in the pond; *Phytobius muricatus*, Bris., abundant in damp moss in a swamp; *Balaninus pyrrhoceras*, Marsh., not uncommon beating oak; *Magdalis pruni*, L., scarce beating blackthorn; *Trypodendron lineatum*, Ol., burrowing in the roots of newly-cut spruce fir, scarce.

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from* p. 71).

Genus VIII: Ctenodecticus, Bol.

Characterised by the small size and the form of the posterior tarsi and the anal segment of the male. The plantulæ are longer than the first two tarsal segments taken together, and the posterior tibiæ have two terminal spines; the anal segment of the male is strongly decurved and covers the cerci; the prosternum is unarmed, and the anterior tibiæ have three spines above. Five species are known.

Table of Species.

1. Elytra free; cerci ♂ not entirely covered by anal segment; posterior femora short (7·5mm.-8·5mm.) 1. MASFERRERI, Bol.

1.1. Elytra covered by pronotum; anal segment almost entirely covering cerci in ♂; femora longer (10mm.-13mm.).

2. Hinder femora with two bands; whole lower margin of side flaps bordered with white; hinder tibiæ with two apical spines beneath; Spanish species .. .. 2. PUPULUS, Bol.

2.2. Hinder femora with one longitudinal black band; side flaps of pronotum with only hinder border white; posterior tibiæ with four apical spines beneath; Sardinian and Algerian species .. .. 3. BOLIVARI, Targ.

1. Ctenodecticus masferreri, Bol.

The generic characters are less strongly marked in this than in the other two species; the elytra are free, and the anal segment of the male is normal, but little produced, and emarginate in the centre, leaving the cerci free; the posterior femora are noticeably shorter than in the other species. Length of body, ?; of posterior femora, 7·5mm. ♂, 8·5mm. ♀.

Taken on *Thymus* at Espinelvas, in Catalonia; originally wrongly recorded from Montserrat.

2. Ctenodecticus pupulus, Bol.

Testaceous, pale above, with a black band on each side; side flaps of pronotum chestnut, with whole of lower border white; elytra hardly visible in male, and quite hidden in female. Length of body, 10mm. ♂ and ♀; of pronotum, 4·5mm. ♂, 3·5mm. ♀; of posterior femora, 11mm. ♂ and ♀; of ovipositor, 8mm. ♀.

A rare insect, occurring on the hills behind Escorial in central Spain.

3. Ctenodecticus bolivari, Targioni.

Differs from preceding in the side flaps of pronotum, which have only hinder part bordered with white, by the prominent elytra of the female, and by the single black band on the posterior femora. Length of body, 13mm. ♀; of pronotum, 5mm. ♀; of posterior femora, 13mm. ♀; of ovipositor, 11mm. ♀.

Occurs in Sardinia; also recorded from Oran in Algeria by Brunner.

Genus IX: Anterastes, Brunner.

Characterised by the absence of the middle pair of terminal spines on the underside of the posterior tibiæ, and by the strongly curved ovipositor. There are two species known, one occurring in Serbia and the other in south-west Europe.

1. Anterastes raymondi, Yersin.

Very slender; reddish-testaceous, the whole body being banded with chestnut; antennæ three times as long as the body; elytra hardly free in either sex. Length of body, 12mm. ♂, 13mm. ♀; of pronotum, 4mm. ♂, 4·2mm. ♀; of elytra, 1·5mm. ♂, 1mm. ♀; of posterior femora, 15mm. ♂ and ♀; of ovipositor, 9mm.-10mm. ♀.

A rare species found on oaks and shrubs; it is exceedingly active and difficult to catch. In France, a few southern localities are recorded, as Hyères, Toulouse, Cannes, Narbonne, Bagnols, le Rayran, Montauroux. In Spain, it has been taken at Espinelvas and Viladrau in Catalonia; in Italy, at Naples, Voltaggio, Pegli, and Genoa. Also in the Tirol at Bozen.

Genus X: Pachytrachelus, Fieber.

Characterised by the long, threadlike, and quite simple and unarmed cerci of the male; the genus is a transition between *Rhacocleis*, which it resembles in the form of the head, and *Olynthoscelis*, which it resembles in the unarmed prosternum and the four terminal spines of the posterior tibiæ. The ovipositor is straight, obliquely truncate at the apex.

Table of Species.

1. Hinder femora with transverse parallel lines; cerci ♂ incurved; ovipositor straight .. .. .. 1. striolatus, Fieb.
1.1. Hinder femora plain; cerci ♂ quite straight; ovipositor slightly curved .. .. 2. gracilis, Br.

1. Pachytrachelus striolatus, Fieber.

Reddish-testaceous, marked with black. Length of body, 18mm. ♂, 23mm. ♀; of pronotum, 6mm. ♂, 6·5mm. ♀; of elytra, 3mm. ♂, 2mm. ♀; of posterior femora, 22mm. ♂, 23mm. ♀; of ovipositor, 20mm. ♀.

A south-eastern species that occurs in long grass in the Tirol; also at Lago Maggiore.

2. Pachytrachelus gracilis, Brunner.

Chestnut; femora plain. Length of body, 13mm. ♂, 15mm.-18mm. ♀; of pronotum, 4mm. ♂, 5mm.-6mm. ♀; of elytra, 3mm. ♂, 1mm.-2mm. ♀; of posterior femora, 17mm. ♂, 18mm.-19mm. ♀; of ovipositor, 16mm.-17mm. ♀.

Occurs with the preceding; recorded from Recoaro in the south Tirol; also in Steiermark and Krain, etc.

Genus XI: Olynthoscelis, Fischer de Waldheim (=*Thamnotrizon*, Fischer, Brunner et auctorum).

This is an important genus, containing about twenty species; they are powerful and active insects, and live often in the densest thickets and jungles. It is characterised by the unarmed prosternum, three spines on the upperside of the anterior tibiæ, squamiform elytra, abortive wings, short plantulæ, which do not exceed the first tarsal segment, four terminal spines on the posterior tibiæ beneath, and more or less incurved ovipositor, pointed at the apex.

Table of Species.

1. Pronotum in both sexes produced far backwards over abdomen; elytra ♂ scarcely surpassing pronotum; hinder femora with inner margin of underside spined.
2. Subgenital lamina ♂ with lobes set with inner angle acute, the lateral band black right up to the margin .. .. 1. chabrieri, Charp.
2.2. Lamina subgenital ♂ with lobes set with inner angle obtuse; the lateral band separated from margin by a pale line .. .. .. 2. brunneri, Targ.
1.1. Pronotum truncate behind; elytra ♂ almost entirely free; posterior femora unarmed beneath. (Subgenital lamina ♂ scarcely emarginate, of ♀ transverse.)
2. Side flaps of pronotum with broad white border on hinder margin.
3. Pronotum with side flaps bordered with white at hinder edge alone; frons ♂ black, of ♀, pale, with black markings; elytra ♂ straw-coloured above .. .. 3. apterus, Fabr.
3.3. Pronotum with side flaps bordered with white behind and on lower margin, a pale band including the dark stripe; frons marbled with dark reddish; elytra ♂ dark above.
4. Large; (21mm.-30mm.) .. .. .. 4. femoratus, Fieb.
4.4. Smaller; (14mm.-21mm.) .. .. 5. fallax, Fischer.
2.2. Side flaps of pronotum with a very narrow white border .. .. 6. griseo-aptera, Linn.

1. Olynthoscelis chabrieri, Charpentier.

Large and powerful; bright green when alive, fading to yellowish when dead; frons pale, with four black spots; pronotum green above, the side flaps black; elytra black, scarcely protruding from beneath the long pronotum. Ovipositor distinctly incurved, pale, with the base black. Length of body, 19mm.-26mm. ♂, 21mm.-30mm. ♀; of pronotum, 9mm.-12mm. ♂, 10mm.-11·5mm. ♀; of elytra, 1mm.-1·5mm. ♂, 0mm. ♀; of posterior femora, 21mm.-26mm. ♂, 22mm.-27mm. ♀; of ovipositor, 18mm.-24mm. ♀.

This fine insect is not likely to be confused with any other on account of its bright green colour, varied with black, but especially of the long pronotum, which almost entirely covers the elytra; it is only likely to be confused with the following, which see.

It occurs in thick shrubs and bushes in southern Europe, from Spain to the Balkans; it is exceedingly active and difficult to catch, and has very powerful jaws; it may sometimes be seen sitting on the topmost twigs of a thorn or hedge, basking in the sun, and may then be caught by a sudden and strong sweep of the net. In France it is not common, but it occurs in Provence, in the Basses-Alpes, and Var; recorded from Chateau Gombert. In Italy, it is found in Calabria, and in Sicily. It has been taken on *Cistus* at Banyuls-sur-Mer.

2. Olynthoscelis brunneri, Targioni.

Differs from the last only in its slenderer build, somewhat shorter pronotum, and by the obtuse inner angle of the lobes of the subgenital lamina of the male, in which the lateral stripe is separated by a pale space from the margin itself; the females can hardly be distinguished apart. Length of body, 22mm. ♂, 26mm. ♀; of pronotum, 9mm. ♂, 8·5mm. ♀; of elytra, 3mm. ♂, 0mm. ♀; of posterior femora, 20mm. ♂, 22mm. ♀; of ovipositor, 18mm. ♀.

Exceedingly rare, but perhaps confused sometimes with the last species. Recorded from the Abruzzi.

3. Olynthoscelis apterus, Fabricius.

This and the following species belong to that group of species in which the pronotum is normal and truncated, instead of being produced backwards. In this species, the elytra are straw-coloured above; the face in the male is black, and in the female pale, with black margins; the side flaps have only the hinder edge bordered with white. Length of body 20mm.-22mm. ♂, 22mm.-25mm. ♀; of pronotum, 8mm.-9mm. ♀; of elytra, 6mm. ♂, 8mm.-9mm. ♀; of posterior femora, 22mm.-23mm. ♂, 22mm.-23mm. ♀; of ovipositor, 19mm.-21mm. ♀.

Occurs in wild stony places in the warmer Alpine valleys in Switzerland, Pfaffers. In the south of France it is very rare, but has been taken at Hyères. It occurs in the Tirol, near Innsbruck, and throughout Austria. It is common in the Tirol and in the southern Alps; in the northern Alps it is more local; Taminathal, near Pfaffersbad, and Vattis, in the Vorderrheinthal, between Ilanz and Brigels; and in Domleschg.

4. Olynthoscelis fallax, Fischer (=*austriacus*, Turk).

Smaller; chestnut or pale above; face marbled with dark; pronotum convex above, chestnut or testaceous, quite smooth, the side flaps black, the margin marked with a pale band which includes a clear

dark stripe; elytra of male prominent, as long as the pronotum, dark, with pale veins; posterior femora chestnut, with a few black lines near the base. Length of body, 14mm.-17mm. ♂, 17mm.-21mm. ♀; of pronotum, 5·3mm.-7·8mm. ♂, 6·8mm.-8mm. ♀; of elytra, 3mm.-4·5mm, ♂, 5mm. ♀; of posterior femora, 15mm.-21mm. ♂, 18mm.-23mm. ♀; of ovipositor, 12mm.-13mm. ♀.

Found among shrubs in hilly places; very rare in France, but recorded from Hyères, Lourdes, Cretz, Milan, Aveyron, Drôme. Also in Switzerland and the Tirol, Tessin, Gorz; it is commoner towards the east, and in Austria we get it at Kirchdorf, near Vienna, Hütteldorf, Purkersdorf, Mauer, St. Veit, Rodaun, Kaltanleutgeben, Sauerbrunn, etc. In Italy, at Voltaggio, Pegli, San Quirico, fairly common in the early autumn.

5. Olynthoscelis femoratus, Fieber (=*fallax*, Yersin).

Differs from *O. fallax* in its larger size, in the plain yellow band on the side flaps of the pronotum, which is more rounded behind, so that the elytra are somewhat more free and also a little darker; the female can scarcely be distinguished from that of *O. fallax*, except by its larger size. Length of body, 21mm.-23mm. ♂, 24mm.-30mm. ♀; of pronotum, 8·8mm.-9mm. ♂; 10mm.-10·8mm. ♀; of elytra, 3mm. ♂, 0mm. ♀; of posterior femora, 24mm. ♂, 27mm.-28·5mm. ♀; of ovipositor, 18mm.-20mm. ♀.

In southern France, at Hyères, Bagnols, Montauroux, Draguignan, le Rayran, Sainte Maxime, Saint Tropez. At the latter locality, a variety was found with the ovipositor only measuring 15mm. In Italy, at Empoli, in Tuscany.

VARIATION.

Variation of Cosmotriche potatoria.—I took a number of larvæ during June, 1906, of this species, near Blackpool, and, among the specimens which emerged from them, were two ♀s having the male coloration, *viz.*, a warm reddish-brown, otherwise they were normal in size and appearance.—W. G. Clutten, 132, Coal Clough Lane, Burnley. *January 30th*, 1907. [Full details of this particular form of aberration, its localities, etc., will be found in *Nat. Hist. Brit. Lep.*, vol. iii., pp. 160-163, under the name of ab. *diminuta*. The form has not before been recorded, we believe, from Burnley.—Ed.]

Aberrations of Callimorpha hera.—Among some insects which I bred from larvæ, ova of which were laid by a female taken near Starcross, were two very nice forms—(1) An example of the ab. *lutescens*, but having the white streaks across the upper wing abbreviated into marginal spots, leaving the colour in the centre of the wing solid. (2) Another specimen with red underwings, having similar markings to the above in the upperwings, but having, in addition to them, the black spots in the lower wings united by a black streak.—Ibid.

Lymantria monacha not in the Hull district.—Your suggestion (*anteà*) that *L. monacha* probably does not occur in the Hull district is quite accurate, nor has it, to our knowledge, ever done so. In 1892, I obtained a dozen eggs from Mr. Edmonds, of Windsor, from which I bred some typical, some intermediate, and one black

example. I paired the black with one of the intermediate forms, and obtained a large batch of ova. These I gave to Mr. Potts, a local lepidopterist, and he has inbred large numbers of the race every year since, and these, unfortunately, appear to be accepted as Hull specimens. Mr. Edmonds said he took the black form in Windsor Forest, but the evidence later went far to prove that they were really from continental stock. All the *L. monacha* sent out of Hull are, therefore, not only not native Yorkshire specimens, but possibly not even of British origin, although inbred here so many years.—J. W. Boult, 50, Washington Street, Newland, Hull. *March 1st*, 1907.

Pieris napi var. bryoniæ.—Reported ♂ in error.—The specimen of *P. napi* var. *bryoniae*, which was shown at the meeting of the Entomological Society, in February, as a male, I submitted to Dr. Chapman for examination, who pronounces the specimen to be an ordinary female. Of course his judgment is final. I wish at the earliest possible date, therefore, to correct the mistake, to which, unfortunately, I have given publicity.—Frank E. Lowe, F.E.S., St. Stephen's Vicarage, Guernsey. *March 11th*, 1907.

NOTES ON COLLECTING, Etc.

Hybernia defoliaria in January.—In reply to Mr. Raynor's note on this subject (*anteà*, p. 46), if he will refer to *Ent. Rec.*, xvi., p. 212, he will see that here, at all events, the occurrence of freshly emerged specimens throughout January is the usual thing.—E. F. Studd, Oxton, Exeter. *March 23rd*, 1907.

Hybernation of Pyrameis atalanta.—It may be of interest to note that I saw a specimen of the above near Exeter, on March 12th, and another here, flying about and settling on garden walls yesterday (22nd inst.). Owing to the distance apart of the two localities (some six miles) they could hardly have been the same insect. Both were settled near me and were in perfect condition.—Ibid.

Early Pyrameis atalanta.—You will be interested to hear that I have to-day watched a hybernated specimen of *Pyrameis atalanta*, a ♂, for a considerable time in my garden. Several members of my family also observed it. It seems a pity that old observers such as F. O. Morris and others are not credited with intellect.—G. O. Sloper, F.E.S., Westrop House, Highworth. *March 30th*, 1907. [The question raised by Mr. Head (*anteà*) is not whether early *P. atalanta* occur in England, but whether they have hybernated here.—Ed.]

Early spring examples of Pyrameis atalanta.—On Monday last, April 1st, a specimen of the above (a female I think, but did not capture) was sunning itself on my garden paths. As hybernated *Gonepteryx rhamni* and *Vanessa io* only made their appearance a few days previously, and *Aglais urticae* about March 20th, whilst immigrant *Pyrameis cardui* do not arrive on our coasts till early June or the very end of May; there surely can be no question that this *P. atalanta* was a hybernated specimen. Perhaps it is because its hybernation has generally been taken for granted that no one has thought it necessary to take or publish notes on the dates of its appearances, and so this idea of non-hybernation has been started from lack of positive evidence on the question. Will all who have this species

with them in the autumn keep their eyes open for it now at once?—K. M. Hinchliff, Worlington House, Instow, North Devon. *April 3rd*, 1907.

Dimorpha versicolora near Reading.—You will be pleased to hear that I have again obtained a wild pairing of *Dimorpha versicolora*. On April 6th, about 12.15 (noon), a ♀ emerged in my breeding-cage, the first this season. I rode over to the *D. versicolora* ground, arriving at 3.30 p.m., and placed her on a birch bush; she commenced calling almost at once, and by 4 p.m. she was paired with a fine ♂, and commenced depositing the same night. I have not missed getting a natural pairing since finding a ♀ in 1896. (See *Nat. Hist. British Lepidoptera*, iii., pp. 259, 263, and *Ent. Record*, xvi., p. 209).—W. E. Butler, Hayling House, Oxford Road, Reading. *April 7th*, 1907.

Spring Lepidoptera.—On March 31st, I saw *Celastrina argiolus* flying in the afternoon sunshine at Oxshott. Is not this date very early? I also noticed a few *Gonepteryx rhamni*, and quite a number of *Aglais urticae*. About the tops of the high birch trees *Brephos parthenias* was flying in some numbers, but was, as usual, difficult to capture with a short-handled net.—J. Alderson, 143, Boundaries Road, Balham, S.W. *April 9th*, 1907.

First appearances of common butterflies.—On March 24th, a boy brought to me a specimen of *Aglais urticae*, captured on the 22nd, when sunning in the roadway of the Mile End Road. On the 29th, specimens of *Pieris rapae* and *Aglais urticae* were seen at Mottingham. On the 31st, *Pieris rapae* and *Aglais urticae* were seen at Strood, and on April 1st, *Pieris rapae*, *Vanessa io*, and *Aglais urticae*, at Lee. *P. rapae* was noticed at Westcombe Park on April 2nd. Several others were seen on April 3rd, by the railway between Havant and Portsmouth, whilst this species and *A. urticae* were the only species noted at Southsea between April 3rd and 6th. The brilliant sunny weather of the last fortnight seems to have brought out *P. rapae*, therefore, everywhere south, even in our town districts, whilst the hybernating Vanessids have evidently made up their minds that spring is here. Perhaps the snowstorm of this morning will make them change their minds again.—J. W. Tutt, 119, Westcombe Hill, S.E. *April 7th*, 1907.

Early appearance of Euchloë cardamines.—I found a ♂ *E. cardamines* on Abinger Common, on April 24th.—N. C. Rothschild, 5 and 6, Chelsea Court, Chelsea Embankment, S.W. *April 29th*, 1907.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Egglaying and young larva of Thecla ilicis.—A female, captured in the Rhone Valley at the end of June last, refused to lay ova when confined in a glass case with oak-twigs, and fed; but when, a fortnight later, she was kept in a small chip box inside a hand-bag, during a journey, some ova were laid therein. Subsequently, a few more were laid under normal conditions of light and exposure (Mr. Tonge has had one of these to photograph). The ova began to hatch on the 12th inst., the young larvæ salmon-brown in tint, with stout bristles, taking at once readily to split oak-buds. They are prone to spin threads over their food, and to dangle thereon from the top of their cage.—R. M. Prideaux. *April 19th*, 1907.

SCIENTIFIC NOTES AND OBSERVATIONS.

Cross-pairings in Lepidoptera.—To the list of weird cross-pairings collected by Mr. Tutt, and just published in his *British Lepidoptera*, vol. v., p. 3, may be added the case noticed by myself and friends in Scotland on sugar in 1900, and recorded in *Ent. Rec.*, xii., p. 283, namely, between *Xylophasia monoglypha* and *Amathes* (*Noctua*) *baia*. I have just received, by the kindness of the author, a copy of Dr. O. Nickerl's "Die Spanner des Königreiches Böhmen" (Prag, 1907), and in this I find another record (p. 54), where it is noted that, at Neuhütten-Otrocin, on August 25th, 1885, a ♀ of *Boarmia secundaria* was taken *in cop.* with a fresh ♂ of *Numeria capreolaria*. Thirteen eggs were laid, from which nine larvæ hatched, but they refused the natural foodplant of the parents (*Pinus abies*), and after feeding unwillingly on *Plantago lanceolata*, died off within a fortnight.—Louis B. Prout, F.E.S., 246, Richmond Road, N.E. *April 15th*, 1907. [Will those who have the work please add these to p. 3.—Ed.]

CURRENT NOTES.

A small party of entomological friends were entertained by Mr. A. Harrison, at his residence, Delamere, Grove Road, South Woodford, on the afternoon and evening of April 20th. The visitors mostly arrived between 3.30 p.m. and 4.30 p.m., tea being served shortly afterwards by Mrs. Harrison. A pleasant afternoon was spent among the interesting insects and books that the host has collected, and in examining the delightful entomological photographs, produced with such artistic skill, by Mr. H. Main. Dinner was served at 7.0 p.m., and, after dinner, entomology (past and present) was discussed until 10 p.m., when the company dispersed. Among the guests were Messrs. R. Adkin, S. Edwards, W. Kaye, H. Main, A. W. Mera, A. Montgomery, A. Sich, R. South, H. J. Turner, and J. W. Tutt.

To complete our figures of the eggs of the British Alucitides for the next volume of *The Natural History of British Lepidoptera*, those of *Leioptilus tephradactylus*, *Hellinsia osteodactyla*, *H. carphodactyla*, *Oidaematophorus lithodactyla*, and *Wheeleria baliodactyla* are still wanted, and should be forwarded to Mr. A. E. Tonge, Aincroft, School Hill, Reigate. Mr. Tonge adds that he would also be glad of the other Alucitine eggs (*i.e.*, of the species not yet published in vol. v) to do again, as he thinks he can improve those he has.

We cannot possibly write individually to all our subscribers who have written *re* vol. v of *The Natural History of the British Lepidoptera*, but should be exceedingly thankful if all our friends (English and continental) will send us habits, habitats, dates, and localities of the "plumes" still remaining to be completed; also of the same particulars of "hairstreaks" and "blues" for *The Natural History of British Butterflies*, vol. ii. We particularly want details for the last two or three years from our old correspondents.

The Congress of the South-Eastern Union of Scientific Societies is to be held at Woolwich this year from June 12th-15th. Almost all the natural history societies of the south-eastern counties are affiliated thereto, among others—the South London Entom. and Nat. Hist. Society, the City of London Entom. and Nat. Hist. Society, the North London Nat. Hist. Society, the West Kent Nat. Hist. Society, etc. Zoological and botanical sections are organised, and London entomo-

logists, ornithologists, zoologists, and botanists are earnestly requested to send in their names as Associates to Mr. C. H. Grinling, 17, Rectory Place, Woolwich.

Among other things undertaken by the Zoological Section is the compilation of a list of the fauna inhabiting the area extending from the Ravensbourne on the west to the Darenth in the east, and bounded on the south by the downs, *i.e.*, it includes the greensand, but excludes the chalk districts just beyond, taking in Dartford, Farningham, Orpington, Farnborough, Bromley, Southend, and Greenwich. Mr. H. E. Page, "Bertrose," Gellatly Road, Hatcham, S.E. (Lepidoptera), Mr. H. J. Turner, 98, Drakefell Road, New Cross, S.E. (Coleoptera, Orthoptera, Odonata, Diptera, Hemiptera, etc.), Mr. S. Edwards, 15, St. German's Place, Blackheath, S.E. (Birds), are anxious to get in touch with all naturalists who have done any collecting within the limits of this area, which includes Shooter's Hill Woods, Bexley Woods, the Thames Marshes, from Greenwich to Dartford, and many other well-known collecting grounds.

It is an unequalled chance to make a thoroughly good faunistic list of the district, in which many of our entomologists might help. Aid is also required from someone with leisure who will work through (1) *The Entomologist's Weekly Intelligencer*, (2) *The Entomologist*, (3) *The Entomologist's Monthly Magazine*, (4) *The Entomologist's Record*, for "localities," "dates," and "remarks on rarity or abundance" (with the authority) of insects of all orders taken within the district. Such lists should be sent direct to Mr. R. Adkin, Wellfield, Lingard's Road, Lewisham, S.E. Any gentleman with leisure, whether living in the district or not, can do this work splendidly. It is of no use to do it by the indexes, but the work properly arranged need not take long. We trust some of our keen, retired, entomologists will respond.

The district is, zoologically, more rich in memories than, perhaps, any place in Britain. The home of Banks, Stephens, Curtis, Stainton, Newman, Douglas, McLachlan, Weir, Darwin, and others, visited by Linné, Fabricius, Frey, Zeller, and most of the leading entomologists of the last two centuries, it would be strange, indeed, if the compilation of a mere faunistic list should prove to be out of the reach of those of us who still live in the district, and have long found much of our happiness in investigating its faunal treasures. The officials of the affiliated London societies owe to the South-Eastern Union a duty in this matter.

A clearly printed revised "Catalogue of British Orthoptera, Neuroptera, and Trichoptera," printed on one side for labelling is being published by W. H. Harwood and Son, Colchester. Price 1s. 6d. It was originally published by Mr. C. W. Dale, but has been brought up-to-date by Messrs. Burr, Lucas, Morton, etc.

To complete our life-history plates of the "hairstreaks," we require larvæ of *Ruralis betulae*, *Strymon* (*Thecla*) *w-album*, and *S. pruni*. Will our Continental and British friends please send any of these (one or two ample) direct to Mr. H. Main, Almondale, Buckingham Road, South Woodford.

SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*April 2nd*, 1907.—EXHIBITS.—LITHOSIA MUSCERDA, larvæ and pupæ reared from the egg,

Mr. H. M. Edelsten. PHIGALIA PILOSARIA from the Reigate district, including a melanic ♂ with a metallic green tinge on the forewings, Mr. Grosvenor. POLYGONIA C-ALBUM, a bred series from Monmouth. DICRANURA BICUSPIS, a cocoon formed between two patches of lichen, the edges of which overlapped the cocoon, Mr. L. W. Newman. Mr. Newman reported that the larvæ of ARCTIA CAIA were practically non-existent this year in localities in Kent, where they are usually abundant. A few larvæ had been found unusually advanced, suggesting that the hot autumn had carried them past the usual stadium, and that the majority had died during the winter in consequence. *April* 16*th*, 1907.—EXHIBITS.—NYSSIA LAPPONARIA, ♂ and ♀, specimens bred this spring, Mr. A. W. Mera. BRENTHIS EUPHROSYNE, larvæ half fed. ARGYNNIS AGLAIA and DRYAS PAPHIA, larvæ apparently in second instar. In continuance of his remarks at the previous meeting Mr. Newman stated that, at Sunderland, larvæ of ARCTIA CAIA were already practically fullfed and very scarce, while at Nottingham, where they are abundant, they are exceptionally backward for the time of year. Mr. H. M. Edelsten mentioned that he had observed in the Fens that the larvæ of ORGYIA GONOSTIGMA, mostly leave the sallow bushes on which they have hybernated, and feed up on various low plants.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*April* 15*th*, 1907.—EXHIBITS.—COLEOPTERA and DIPTERA in MOLES' NESTS.—Mr. Joseph Collins, coleoptera and diptera taken from moles' nests in the vicinity of Oxford, *viz.*: *Quedius vexans*, common; *Q. longicornis*, a short series, much rarer than *vexans*; *Aleochara spadicea*, fairly common; *A. succicola*; *Heterothops nigra*, common; *Oxypoda spectabilis*, not common; *O. metatarsalis*, in two localities, a nice series; *Homalota paradoxa*, *Oxytelus fairmairii*, *O. sculpturatus*, *Medon castaneus*, *M. propinqua*. Diptera: *Hystrichopsylla talpae*, the mole flea. TÆNIOCAMPA GOTHICA FEEDING ON LILAC.—Mr. W. A. Tyerman, a long bred series of *Taeniocampa gothica*, the larvæ of which had fed on lilac. PRESERVED LARVÆ OF ODONTOPERA BIDENTATA.—These showed considerable protective resemblance to the lichen commonly found on birch bark, Mr. Tyerman.

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*March* 28*th*, 1907.—EXHIBITS.—ANCHOCELIS RUFINA from various localities, those from Rannoch being the most richly coloured, Mr. Adkin. PIERIS NAPI was reported by Mr. Montgomery to be flying in mid-March. PIERIS NAPI, P. RAPÆ, and VANESSA ATALANTA, by Mr. L. W. Newman, to be common in south Devonshire. *April* 11*th*, 1907.—EXHIBITS.—EUTRICHA QUERCIFOLIA and EPICNAPTERA ILICIFOLIA larvæ preserved at different instars. Mr. South, who discussed the orange markings present on the 2nd and 3rd segments. LÆLIA CŒNOSA, a cocoon, Mr. South. DICRANURA BICUSPIS.—Cocoons amongst lichen, a photograph, also a photograph of the larva of CHARAXES JASIUS, showing the peculiar conformation of the head, Mr. Tonge. OXYLŒMUS VARIOLOSUS, a rare coleopteron taken in Darenth Wood, August, 1903, Mr. West. POLYGONIA C-ALBUM, a long bred series picked from some 700 specimens, showing but trivial variation. ANAITIS PLAGIATA, a bandless form. EUPITHECIA PUMILATA, with but two transverse lines, Mr. B. Adkin. CYMATOPHORA DUPLARIS from Rannoch, Mr. Adkin, who contributed notes on the two very distinct forms.

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Duplicates.—Monacha,* Macilenta, Elymi, Craccæ (fair), Orion,* Ophiogramma, Glandifera. *Desiderata.*—Wild larvæ of Caja.—*W. J. Ogden, 1, West Bank, Stamford Hill, London, N.*

Duplicates.—Pupæ: Testudo, Asella, Cucullina, Curtula, Orion, Coryli, Advenaria, Illustraria, Porata, Orbicularia, Tersata. *Desiderata.*—Living Sinapis, C-album, Polychloros, Io, Atalanta, Cardui, Lucina. Larvæ: Pruni, Prunaria. Ova: Hispidaria, Lapponaria, Prodromaria.—*H. W. Head, Scarborough.*

Duplicates.—Paphia, Sibylla,* Betulæ, W-album, Quercûs, Rubi, Ligustri,* Tiliæ, Porcellus, Chrysidiformis,* Fuciformis, Statices, Cribrum, Chrysorrhœa,* Vinula,* Trepida,* Conigera, Ophiogramma, Pisi, Flavago,* Sambucaria,* Apiciaria,* Prunaria,* Autumnaria,* Abruptaria,* Smaragdaria,* Sponsa,* Promissa,* Belgiaria, Pictaria, Picata, Dotata, Undulata, Procellata, Unidentaria, Ferrugata, Ornata, Adustata, Ochreata, Linariata,* Pulchellata,* Fontis, Octomaculata, and others. *Desiderata.*—Local species, Macro and Micros.—*Thos. T. Washford, 66, Falmouth Road, S.E.*

Duplicates.—Progemmaria *var.* fuscata, larvæ from Delamere; Prodromaria larvæ. *Desiderata.*—A. prunaria larvæ of banded form, and other larvæ.—*M. A. Pitman, 11, Park Lane, Norwich.*

WANTED.—Ova or larvæ of Hispidaria and Lapponaria. *Duplicates.*—Larvæ of Ruberata (red), Ruberata (black ♂ × red ♀), Ruberata (orange ♂ × black and white ♀), Ruberata (type), Impluviata (black), Impluviata (type ♂ × black ♀), Elutata (black), Elutata (rust-coloured forms). All are from wild ova or pupæ.—*J. W. Harrison, 181, Abingdon Road, Middlesbro'.*

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MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W., 8 p.m. Meetings—June 5th; October 2nd, 16th, November 6th.

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m., except in July and August. (No dates received.)

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. Field Excursions:—May 12th, Loughton, 9.45 a.m., Liverpool Street.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m.

North London Natural History Society, The Amherst Club, Amherst Road, N. (No notices.)

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec., H. R. Sweeting, 6, The Elms, Dingle, Liverpool.

Birmingham Entomological Society, at the rooms of the Birmingham Nat. Hist. and Philosophic Society, Avebury House, 55, Newhall Street, at 8 p.m. June 3rd, July 1st, September 23rd, October 21st, November 18th.

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singing by a very large choir and accomplished soloists; and the presentation of addresses by the delegates, Swedish and Foreign. The point of central interest to the British Delegates arrived when the President, speaking in English, announced the award—until then kept secret—of the Linnean medal to our great veteran botanist, Sir Joseph Hooker.

The Delegates presented their addresses, and were introduced by a single representative for each country precisely as in Upsala, save that, on this occasion, the order was varied, the two groups of Swedish Delegates advanced first instead of last. At 6.30 p.m. the Delegates were entertained by the Academy at a banquet at Hasselbacken, the ladies dining with the Countess Mörner. At 8.30 the Corps of Stockholm Students came to conduct the party to the Zoological Gardens at Skansen for the "Fête du Printemps." On Sunday there was an excursion to the country-house of Linnæus, at Hammarly, which we were unfortunately compelled to miss, and in the afternoon a garden-party was given by the Prince Regent. Heavy rain fell at first, but the weather fortunately cleared, and Stockholm has a wonderful property of drying quickly after a thorough downpour. Professor Montelius, an old friend at Oxford and at British Associations, here offered most kindly to show us the prehistoric collections in the National Museum. When I hesitated thus to encroach on his time, he said, "Oh! I have nothing to do!" This, from one of the greatest and most prolific workers in Europe was altogether too much for my gravity.

On Monday we were invited to see in the Zoological Gardens a most interesting and amusing exhibition of Swedish national dances in the picturesque costumes of various parts of the country. Heavy rain delayed us, so that we were a little late in meeting our kind friend at the National Museum. The hour there with him was one of the most interesting I have ever spent in my life; but the already too great length of this article prevents me from speaking of the wonderful demonstration he gave us of the art and commerce of Sweden during the neolithic and bronze ages.

We found on returning to the hotel that our chance of getting back in good time depended upon departure from Stockholm that very night, and so this remarkable visit came to an end.

I had greatly looked forward to the pleasure of meeting for the first time Professor Chr. Aurivillius, who has most kindly aided the Hope Department on many occasions. He occupies the important position of Secretary to the Royal Swedish Academy, and his serious illness was the one cloud upon the celebration in Stockholm. I had the pleasure of spending several pleasant hours with his colleague, Professor Yngve Sjösted, and in studying the insects under his charge in the Natural History Museum.

Looking back on the whole of the celebrations in memory of the illustrious naturalist who was born 200 years ago, the fact which impressed itself most was the manner in which the occasion was felt and honoured by all classes of the nation. The Prince Regent and his brothers attended every meeting and, with a single exception, every banquet I have mentioned in Upsala and Stockholm, and on every occasion took the most active interest in the proceedings. The part taken by the most important officers of the State was also most

striking. But to me most impressive of all was the way in which the people entered into the spirit of the occasion.

In Upsala there was an entire absence of crowding and pushing on the part of those who lined the routes of the processions, while the authorities on their part had intentionally lengthened the short distances in order to make the conditions favourable for as many spectators as possible. The same national interest in the occasion was even more evident at the comparatively simple ceremonial of Råshult, thronged by school-children and country-folk.

Our densely-crowded country presents special difficulties, but allowing full weight for these, we have much to learn from Sweden.

The British Cryptinæ.

It is a pleasure to take up an entomological book dealing so thoroughly with its subject-matter as does Mr. Morley's second volume of the British ichneumons, and the writer is to be congratulated on having been able to complete his second volume so soon after the appearance of the first. This disposed of 310 species of the *Ichneumoninae* in 291 pages, with 50 further pages of introductory matter. The present volume is of 328 pages, and deals with 317 species, forming the group *Cryptinae*, with but a very short introduction, which reproduces the table of the families of *Ichneumonoidea* and the subfamilies of the *Ichneumonidae*, published in the first volume. There are 43 (the introduction says 41) genera, into five of which 199 of the species fall, so that most of the genera contain few species. A considerable number of British specimens of the family are, however, already known to the author, which he has been unable, as yet, to assign to described species, so that captures must not be forced into the tables. Unwilling to add to the number of synonyms of species, which have probably been already named, Mr. Morley has only described seven species as new to science in the present volume. This is, in some measure, a compilation. It consolidates the present knowledge of the subfamily *Cryptinae* so far as relates to the British species, and cannot fail to be of great value to students desirous of working at the group. It may be hoped that it will lead to more entomologists studying the *Ichneumonidae*. The most original part of the work is that dealing with the genus *Pezomachus*, and we are inclined to think that this is the best part of the volume, which is throughout a monument of well applied industry and perseverance.

One of the difficulties that confronts a student of the parasitic hymenoptera, or rather those insects includedin the superfamily *Ichneumonoidea* is undoubtedly the difficulty of ascertaining the family to which an "ichneumonoideous" insect belongs, but any one who will take the trouble to divide up, as far as he can, some two or three hundred insects of the superfamily, according to the tables given in the introduction by Mr. Morley, will probably, at the end of the time, find that his difficulties have to a large extent disappeared and that specimens, which at first would

Ichneumonologia Britannica, vol. ii: The ichneumons of Great Britain, a descriptive account of the families, genera, and species indigenous to the British Islands, together with notes as to classification, localities, habitats, hosts, etc., by Claude Morley, F.E.S. (author of the *Hymenoptera of Suffolk*, *Ichneumoninae of Britain*, etc., etc.), *Cryptinae*.—Printed (for the author) and published by James H. Keys, Whimple Street, Plymouth, 1907.

have given trouble, are seen to have a decided affinity to some one or other of the specimens already known, and that there is no real difficulty in deciding on the family (or subfamily in the case of the *Ichneumonidae*) to which they belong. Further help may be obtained by illustrations from works easily accessible to all, such as Curtis' *British Entomology*, Stephens' *Illustrations*, Westwood's *Introduction*, Marshall's *British Braconidae*, Cameron's *Phytophagous Hymenoptera* (*Cynipidae*), Ashmead's *North American Proctotrypidae*, etc. Illustrations are particularly valuable to the early study of a new group of insects.

The present group of the *Cryptinae* contains many wingless forms, and a knowledge of the structural characters, and not merely of the venation, is essential for discrimination; still, the general look will, after a comparatively short practice, enable a wingless Cryptid to be separated from other wingless hymenoptera almost at first sight. Mr. Morley has expressed a doubt as to the position of one of the species described by him in the volume (*Thaumatotypus billupsi*, Bridgm.), so it may not be amiss to add a few remarks on the characters used for such discrimination.

The characters which appear to distinguish the wingless *Cryptinae* from the other ichneumons are the petiolate 1st segment of the abdomen the sculpture of the post-petiole and the exserted ovipositor in the ♀, combined with the furrows on each side of the mesosternum (see Introduction, p. xv). The chief difficulty will thus be found (as is usual in the *Ichneumonidae*) to lie with the ♂, but still good characters are left even for this. Passing to the other families which form the complex superfamily of *Ichneumonoidea*, we may observe that wingless Bracons, of which there are few in Great Britain, may (except in the case of the Braconid group *Flexiliventres*, to which belong the minute insects that feed on the *Aphidae* of our gardens—recently written about and illustrated in the *Daily Mail* as Chalcids, which, if any wingless forms exist, could probably be distinguished by their minute size, slender bodies, and many-jointed antennæ), have the 2nd and 3rd joints of the abdomen united so as to have no power of bending at that point even where a suture (the "suturiform articulation" of Marshall) exists. This is never the case with a Cryptid. On the other hand, wingless Chalcids have usually a distinct scape to the antennæ and show traces of metallic coloration. They are also, in this country, usually extremely minute, resembling at first sight wingless diptera rather than any other order. The intermediate legs are often more developed than the posterior, and they often have the power of jumping.

Wingless and brachypterous Proctotrypids are, perhaps, more difficult to know, but, being almost in every case females, the second character assigned in the text to the family, *viz.*, the extrusion of the ovipositor from the anal extremity of the abdomen is usually sufficient in practice, and other characters which apply to both sexes may be obtained from the extremely smooth, hardened body of the *Proctotrypidae*, with an abdomen having closely united dorsal and ventral plates; from the antennæ, which in the British species have never more than fifteen joints, and in many cases much fewer, and from the fact that, in brachypterous forms, the prothorax invariably reaches back to the base of the forewings (as in the *Cynipidae*).

Wingless *Cynipidae* being ♀s, should be known by the terebra,

which originates close to the base of the abdomen and is usually semi-spiral, but, in the case of some of the parasitic *Cynipidae*, they run very close to certain of the *Proctotrypidae*: the abdomen is, however, usually compressed in these *Cynipidae*. In the case of *Cynipidae* with wings, the absence of a stigma and the peculiar zigzag type of neuration*, which can be seen from any illustration of the family, prevents confusion with the *Proctotrypidae*.

Most of these points are brought out by Mr. Morley in his first volume. There is only one small criticism to make, and that is with regard to his character for distinguishing the male winged Chalcids from the male Proctotrypids. Ashmead has pointed out that, in the old genus *Proctotrypes* (which includes *Exallonyx*, Kieff.), there exists a ring joint, and, in winged forms, one would, in practice, in the *Proctotrypidae*, rather have recourse to the prothorax reaching back to the base of the forewings, which it does not in the *Chalcidae*, and the presence in the wings of most Chalcids of a vein running from the costa obliquely into the disc of the wing, and there terminating in a round dot, or stigma, which is not, so far as we know, present in any other group of Hymenoptera.

There is another group usually assigned to the *Proctotrypidae*, *viz.*, the *Mymaridae*, microscopic insects with fringed wings, which feed on the eggs of other insects. These are mostly invisible to the naked eye, except on a window-pane. Ashmead relegated them to the Chalcids, but Dr. Kieffer has apparently restored them to the *Proctotrypidae*, where they previously stood, and, as this family is probably a collection of many families as divergent from one another as, say, the *Ichneumonidae* and the *Braconidae*, there seems no objection to this inclusion for the present. We may here point out that some of the *Proctotrypidae* may even approximate to the aculeates, with which Haliday included the *Bethylinidae* on account of his observation of their habits (see *Ent. Mag.*, vol. ii., p. 219), lately confirmed by an observation recorded by Dr. Kieffer (*André*, vol. ix., p. 522). Ashmead, in his latest classification, separates the *Bethylininae*, the *Embolemininae*, and the *Dryininae* from the *Proctotrypidae*, and says that they ought to be regarded as more nearly related to the fossorial aculeates. That the three subfamilies are nearly related appear by their all having (when winged) lobed posterior wings. In habits, however, the *Dryininae* are true parasites (*Entomophaga*), while the *Bethylinae*, or some of them, appear to store their prey for the larvæ to feed upon.

There is, we believe, another reason which has rendered the study of the *Ichneumonidae* unpopular—the fact that the main divisions of the group are so badly distinguished that it is no easy matter to assign an ichneumon approximately to a correct place, even with the help of the most carefully-framed tables. This difficulty applies between the tribes and genera of the *Ichneumoninae*, and even the most carefully-framed tables in Mr. Morley's first volume did not wholly remove it. Thomson's divisions of Gravenhorst's genus *Ichneumon*, as there adopted and praised, separate the *Joppides* and the *Ichneumonides* by a primary character, *viz.*, the sulcus between the metanotum or propodeum and the scutellum or post-scutellum, which is very difficult to properly appreciate, and the generic characters are in many cases hardly easier of application. The result is practically

* The *Proctotrypidae* with the wings without a stigma have them almost veinless.

that a superficial acquaintance with the *Ichneumoninae* is almost useless, and that to make any real progress in the group it is necessary to get to know the insects as individual species rather than by means of tables or primary characters, and it is here that Mr. Morley's careful descriptions should prove so useful. The *Cryptinae* appear to us to be little or no better in this respect. The primary divisions adopted by Mr. Morley are apparently most simple, and consist in differences in the metathoracic ridges, but there are, in reality, many exceptions, and the gradations from one form to another and the individual variations render it no easy task to assign some of the forms to the right group. Even primary characteristics in the *Ichneumonidae* are so inconstant that we would suggest that it would be an advantage in dealing with them, to place in many cases families, genera, and species, more than once in the tables, and to give secondary characters which can be used to assist, where the primary fail. Mr. Morley's tables, which we believe are largely taken from continental works, are mainly founded on structural characters, and usually deal with both sexes together. Scientifically, this is correct and desirable, but we suggest that, in future volumes, if room can be found, it would be an advantage if alternative tables simply for naming purposes were added when the scientific characters are likely to prove difficult to beginners, or seem to require the destruction of the specimen. Thus, a character like "pronotum centrally carinate and laterally foveate," see p. 117, is scientifically of great value, but practically difficult of application. A supplementary table would have been useful here, and Mr. Morley knows his insects so well, that we are sure he could supply one. Another slight disadvantage to the student arises from Mr. Morley's objection to classifications dependent on the presence or absence of wings. In this objection we entirely agree with him, but, by abolishing the genus *Aptesis*, Först, Mr. Morley will probably agree that he has not made the mere task of identification easier. Perhaps an opportunity of publishing easy alternate tables, and some further illustrations of critical points, giving help to the identification of the wingless and brachypterous forms, may arise hereafter. The little woodcuts dealing with some of these points are capital. We hope that the subscriptions to the next volume will be sufficient to enable us to have a few more, and also a few more tables dealing with the sexes separately, like that of the ♂s of *Microcryptus*. It is impossible to give too much help in a really difficult group like the *Ichneumonidae*.

There is, in the preface, an explanation of the way in which the descriptions of the insects contained in the text are drawn up. This is very acceptable. In too many works of our acquaintance it is impossible to say whether the description given is taken from an earlier writer, or is a new one made for the occasion. We apprehend it is important for the student to know which it is. Mr. Morley, in building up his descriptions from the earlier writers, and checking and adding to them, undertook a laborious task, but the result should be, and is, where we have checked it, complete and satisfactory in every way, and, so far as we have been able to see, Mr. Morley has avoided introducing different systems of nomenclature of the parts of insects into his descriptions, a fault common, and in fact difficult to avoid, in compilations, and particularly irritating in hymenoptera, in which

group, the parts, and especially the wing-veins and areas, have had so many different names assigned to them by different writers.

Mr. Morley has, for the first time, brought together the two sexes of many species described in the volume. Some of his combinations require further proof before they can finally be accepted, but as there is a first rate index of synonyms no harm can, in any case, be done, and we think it extremely desirable that writers with experience in this group, like Mr. Morley, should attempt the work of combination, as long lists of insects of opposite sexes, such as exist in many of the groups of the other families, are very unsatisfactory. At the same time it is undoubtedly a fact that, in the *Parasitica*, one sex is often common and the other extremely rare, and it is not uncommon that all the insects bred from one host on one occasion should be of the same sex.

Mr. Morley uses many difficult words, but as they make for brevity and clearness they appear to us an advantage, such words as "sternauli," "notauli," "apophyses," etc., can easily be looked up in the glossary to volume i, and are so much more compendious than the meanings there assigned to them that their use is quite justified.

The volume does not suffer from the necessity of having to bow to the will of a publisher desirous of selling to a non-entomological public. The result is most satisfactory. The synonymy is fully given with full references, and, when necessary, discussed; there are tables which are as complete as possible without increasing the size and cost of the volume, adequate generic descriptions and a full specific description in all cases except when it is sufficient to point out the differences from very closely allied insects, while plenty of space is, in volume ii, given to the habits, so far as known (though, alas, the knowledge is yet inadequate), and also to localities. Most of the recent captures alluded to appear to have been identified by Mr. Morley himself, so there is every reason to accept their accuracy.

Mr. Morley has already, we understand, started on his third volume, which is to deal with the *Pimplinae*, and it is to be hoped that the support necessary to enable him to produce not only this, but also the fourth and fifth, and, if necessary, a supplement, which will complete the *Ichneumonologia Britannica*, will be forthcoming.

Mr. Keys is to be congratulated on the printing and general get-up of the work which is of a high standard, and volume ii will, we are sure, have been heartily welcomed by all desirous of becoming better acquainted with our British entomological fauna, and should, together with the first volume, find a place in the library of every British entomologist and every continental hymenopterist.

NOTES ON COLLECTING, Etc.

A COLD BUT SUCCESSFUL HUNT FOR PUPÆ OF ÆGERIA SPHEGIFORMIS.—On Monday, May 20th, I visited Pamber Forest and its outskirts. The cold northerly blasts and the general gloominess effectually prevented imagines from showing themselves. An occasional tap of a branch or a kick of the undergrowth did now and then show an insect, but such revelations during seven hours could be counted on the finger-tips. About 3 p.m. other collectors were met, but enthusiasm was dying out, and the one desire seemed to be to get away from the damp and dismal surroundings. Fortunately, with me was a young and ardent

spirit, at that time of life when all is new, and all is for the best, when the highest tree-top is not too high for a big climb, and even if no specimen is got, the joy of exercise satisfies. Such an one kept me going, and by searching and cutting, we got pupæ of *Ægeria sphegiformis* and *Æ. cynipiformis*, and in the evening returned not altogether unsuccessful.—J. Clarke. *June 6th*, 1907.

Callophrys rubi and Brenthis euphrosyne at Westerham.—*Callophrys rubi* was out at Hill Park, Westerham, on May 29th; on that day only one *Brenthis euphrosyne* was seen.—(Rev.) E. W. Bowell, Penshurst, Kent. *June 4th*, 1907.

Breeding Hellinsia carphodactyla.—I am pleased to chronicle the emergence, during the last week, of half-a-dozen specimens of *H. carphodactyla*, from larvæ found in this neighbourhood. I learn also that Dr. Chapman and Mr. Sich have been successful in rearing specimens from larvæ with which I was able to supply them.—J. Ovenden, Frindsbury Road, Strood, Kent. *June 14th*, 1907. [Those lepidopterists who wish to rear the second brood of this species should search for the larvæ on the seedheads of *Inula conyza* in July.—Ed.]

Hybernation of Pyrameis atalanta.—As bearing on the discussion on this subject, and as presenting a fact of the species actually being observed whilst hybernating, the following may perhaps be worth repeating:

"When watching some straw being taken out of a barn on January 15th last, I observed three specimens of *Vanessa atalanta* on one of the bundles. Two were dead, but the other was living, and on being removed to a warm room, was soon flying about. Might not the dead specimens give a clue to the comparative rarity of hybernated specimens of this species being observed, some being too delicate to live through the winter. They were close together when seen, and very much worn." (R. Freer, Gouville and Caius College, Cambridge, *Entom.*, 1885, p. 121).

This, at any rate, deals with the species in a state of hybernation in January.—(Rev.) C. R. N. Burrows, The Vicarage, Mucking, Stanford-le-Hope. *June 15th*, 1907.

Strymon pruni, etc., in the neighbourhood of Geneva.—I took ten specimens of *Strymon pruni* in half-an-hour at Hermance, on June 9th, 1907, flying round a few dwarf oaks and low shrubs, in a tiny valley formed by an equally tiny stream. All the captures made were males, which, after flitting through the shrubs, settled on the leaves and sunned themselves. I took five, one after the other, on a little branch of scrub oak, which seemed to have some attraction. On June 12th I found another locality for the species, in a place about three miles from Geneva, in the direction of the Jura. I captured fifty-five examples, all on oak-leaves, only a few females among them. Why oak? There was not a sign of plum or sloe or other wild fruit-tree in the wood. I am trying for eggs, and shall attempt feeding the larvæ on "oak."—P. A. H. Muschamp, F.E.S., 20, Chemin des Asters, Geneva, Switzerland. *June 19th*, 1907.

Aberrations of butterflies on the Salève.—On June 16th, I captured a specimen of *Agriades bellargus* ab. *striata* on the Salève, where I also captured four examples of *Hesperia malvae* ab. *taras*.—Ibid.

Sleeping position of Pararge egeria.—Late in the afternoon of May 19th, 1907, I saw a specimen of *Pararge egeria* take up its position for the night. It flew up into some ivy growing round the trunk of a tree, and settled a good twelve feet from the ground on one of the inner leaves, where, after opening and shutting its wings two or three times, it composed itself for the night. To make sure it had settled

for good, I watched it for some time, and nearly an hour later found it still there.—J. F. Bird, The Nurtons, Tintern, Monmouth. *June 20th*, 1907.

Fixed position of moth extending over several days.—On May 19th, I found, or rather re-found, an example of *Triaena psi*, on the trunk of an apple-tree. I had noticed it there in the same spot several days before, I think either on the 15th or 16th, and there it remained, without moving, until the night of the 22nd, when it rained in torrents. The next morning it was gone, probably washed away, for the tree-trunk was soaking wet. It was in perfect condition, and, as we wish to obtain *T. tridens*, we have been looking out for females of the "daggers" so as to obtain ova; I, therefore, when I first noticed this particular specimen, lifted one of the wings with the blade of my pen-knife to ascertain its sex, and I felt so sure that it was a male that I left it. I also remember for certain that an example of *Hemerophila abruptaria* I saw on successive days resting in one spot on a wall in our garden at Hammersmith was a male. The weather was very cold for May all the time. Once before I remember having seen a moth stay in one spot for several days previous to bad weather. This was at Fairlight, near Hastings, when I noticed a specimen of *Amphidasys betularia* remain for some days on the edge of a thatched roof until it disappeared during a violent thunderstorm. I have several times observed moths, Geometrids only, I think, resting, without moving for days at a stretch, in the London district, but do not remember if stormy weather always followed.—Ibid. [It would always be well to observe the condition and sex of these "fixtures." In our experience, they are usually females that have laid all their eggs, and, having nothing left to do, remain in one spot and do it.—Ed.]

Erastria fuscula in Monmouthshire.—On July 1st, I beat an example of *Erastria fuscula* at Llandogo. Monmouthshire is not given by Barrett as a locality for this insect, although the neighbouring counties of Herefordshire, Gloucestershire, and Glamorganshire are mentioned.—Ibid.

Oviposition of Polyommatus icarus.—On June 16th, I noticed a female *Polyommatus icarus* ovipositing on a lawn. One egg I saw laid in the interstices of a budding flower-head of *Trifolium repens*.—Ibid.

Strymon pruni in the Dept. du Nord.—I captured, on June 20th, some examples of *Strymon pruni* in the woods of Bourlou, near Cambrai. This species has not before been recorded for the Dept. du Nord, and I trust that this will be sufficiently interesting to indicate it as a new locality in *The Natural History of the British Butterflies*.—E. Brabant, F.E.S., Morenchies, near Cambrai, Nord, France. *June 22nd*, 1907. [It is unfortunate that the part of *Brit. Butts.*, containing the "Localities" and "Distribution" of *Strymon pruni*, was passed for press, and printed, about a week before the capture was made, so we publish the fact here. Subscribers can carry it over into their copies as a marginal note.—Ed.]

Wheeleria migadactyla (spilodactyla) in the Dept. du Nord.—I also wish to record the fact that I am taking, at the present time, *Wheeleria migadactyla*, in my garden on some plants of *Marrubium vulgare*.—Ibid.

Lepidoptera on the Kentish chalkhills.—While wandering to-

day on the chalk uplands between Chatham and Maidstone with Mr. Ovenden, I had the fortune to capture a female *Colias edusa*, from which I trust my friend may get ova. Of imagines, there was a remarkable absence; one *Augiades sylvanus*, one *Merrifieldia tridactyla*, a few *Stenoptilia pterodactyla*, one *Acidalia ornata*, a few *Coenonympha pamphilus*, some *Epinephele janira*, a solitary blue (probably *Polyommatus icarus*), two *Epichnopteryx pulla*, larvæ of *Marasmarcha lunaedactyla* (common), two or three very small larvæ of *Dicranura vinula*, a few of *Gonepteryx rhamni*, an abundance of larvæ of *Anthrocera filipendulae* (just spun up, or in the act of doing so), odds and ends of *Tortrices*, but scarcely a Tineid moth to be seen, the usual varied assortment of *Crambi* (but not in the usual numbers), *Tortrix viridana*, of course, in numbers, with an extremely small *et caetera*, is an unprecedentedly poor record for a day in early July.—Henry J. Turner, F.E.S., 98, Drakefell Road, New Cross, S.E. *July 7th*, 1907.

Yponomeuta malinellus, or padellus, at sea.—On July 26th, 1895, when proceeding down the English Channel in H.M.S. "Mersey," to join the Reserve Squadron at Torbay, and when some 20 or 30 miles to the southward off the coasts of Dorset and Devon, a large number of this pretty little species flew on board. It was a calm steaming-hot day, with intervals of bright sun and thick drifting fog, and what little movement there was in the air appeared to be from the south and southwest. The moths flew on board between 11 a.m. and 3 p.m., but I was unable to satisfy myself from which direction they came, for there was scarcely enough wind to influence their flight; we just seemed to steam into them as they were fluttering in the air, and they were as numerous on one side of the ship as the other, and some seemed to float down from the air above. A fresh breeze from the southwest sprang up shortly after 3 p.m., and the moths disappeared. I was not very much interested in Micros at the time, and only boxed and set a couple of these visitors, which I came across a week or two ago, while I was looking over and arranging my small collection of Micros. I thought, when these moths came on board, that they were *Yponomeuta cagnagellus*, but, on comparing them with that species, there seemed to be a slight difference, so I placed one of them among a small lot of Micros I was sending to Mr. Eustace R. Bankes, who had kindly undertaken to examine them, and he determined them as above. As far as I can remember, all the examples noticed had white forewings; I do not think there were any of the grey varieties among them.—Gervase F. Mathew, Dovercourt, Essex. *May 25th*, 1907.

Notes on Yponomeuta padellus, L., and malinellus, Z.—I am indebted to Paymaster-in-Chief Gervase F. Mathew, R.N., for having, at my request, so kindly contributed the above note on his interesting and valuable observations. Very seldom, I imagine, have any of the *Tineina* been actually noticed on migration, though strong circumstantial evidence that at least one of them, *viz.*, *Plutella maculipennis*, Crt. (*cruciferarum*, Z.), not infrequently reaches our shores in immense numbers, from across the sea, has often been forthcoming. It is impossible, for the reason given below, to say with any certainty whether the specimen submitted to me was *Yponomeuta padellus*, L., or *malinellus*, Z., but the fact that all the individuals seen are believed to have had unclouded *white* forewings, as had the two that were captured, makes it probable that a flight of *malinellus* was winging its

way towards our south coast from the continent, the apparent direction of the wind at the time favouring this idea. *Y. malinellus*, which feeds upon apple, and of which the typical imago has white forewings, has been generally, though not universally, regarded by continental authorities as distinct from *padellus*, in which the primaries are usually either grey, or else white, more or less clouded with grey. It has never, except temporarily long ago, been admitted to a place in the British List, our specimens bred from or taken amongst apple (upon which the larvæ are often far too abundant, and, alas! do not confine their attentions to the leaves, but frequently, I notice, gnaw and devour portions of the unripe fruit as well) having been referred, on Stainton's authority, to *padellus*. But among these there occur certain individuals with the ground-colour of the forewings unclouded white, and these seem quite inseparable from *malinellus* [*cf.* Snellen, *Vlind. v. Ned., Micr.*, p. 510 (1882)]. Stainton at first treated our apple-feeding form as a good species, under the name *malivorella* [*Syst. Cat.*, p. 15 (1849)]; then he sunk it, somewhat doubtfully, as a form of *padellus* in *Ins. Brit., Lep. Tin.*, p. 60 (1854), and obviously, from the mention of "apple" as one of the foodplants, included it under *padellus* in *Man.*, ii., p. 308 (1859), but he finally appears, from a remark made in *Ent. Mo. Mag.*, xxii., p. 101 (1885), to have considered our apple-pest as not identical with the continental *malinellus*. Some interesting notes "On the *Hyponomeuta* of the Apple," from the pen of the late Mr. C. G. Barrett, will be found in *Ent. Mo. Mag.*, xxii., 100-1. Two questions, however, still remain unanswered, *viz.*, (1) Is *Y. malinellus*, Z., specifically distinct from *padellus*, L.? (2) If so, does *malinellus*, Z., occur in Britain, or is our apple-feeder merely *padellus*, L.? I hope to breed a lengthy series of moths from my apple-trees this summer, but their emergence will clearly be so abnormally late, owing to the prolonged spell of unseasonable weather, that I must report upon them separately later on, instead of any longer withholding the note that Mr. Mathew placed in my hands.—Eustace R. Bankes, Norden, Corfe Castle. *July 10th*, 1907.

COLEOPTERA.

Coleoptera in Sherwood Forest.—A few days spent in Sherwood Forest after coleoptera, from June 21st to 25th, with Professor Beare and Mr. Kidson Taylor, who was staying there, proved not unproductive, in spite of the wet and cold weather. Beating birch produced *Saperda scalaris* and *Cryptocephalus coryli* in some numbers, *Magdalinus carbonarius* a few, *Brachytarsus varius*, *Rhynchytes interpunctatus*, *Deporaus megacephalus*, *Malthinus frontalis*, several specimens of *Elater lythropterus*, and an *Anobium*, which turned out to be *paniceum*, this must have been introduced in pheasants' food. Under bark the best thing was a short series of *Synchita juglandis*, not recorded from Sherwood before. Other species obtained in this way were *Hypophloeus castaneus*, not uncommon, *Quedius xanthopus*, *Agathidium varians*, *Bolitochara obliqua*, *Scydmaenus exilis*, *Corticaria serrata*, and *Philonthus splendidulus*. *Ptinus subpilosus*, new to Sherwood, *Oligota apicata*, *Micropeplus margaritae*, *Orthoperus atomarius*, etc., were beaten out of faggots. *Enicmus rugosus* occurred in a powdery fungus, and *Ptenidium gresneri* was found with *Lasius fuliginosus*.—Horace Donisthorpe.

Coleoptera of Epping Forest.—I have been fortunate enough to take two rather rare coleoptera within the last fortnight; an entirely fuscous male specimen of *Nacerdes melanura*, L., and also *Phloeotrya stephensi*, Dur. (*P. rufipes*, Gyll.), taken under bark of dead tree, in Epping Forest.—Humphrey S. Evans, 70, Huron Road, Upper Tooting, S.W. *July 2nd*, 1907.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Larva of Melitæa didyma. — *Final instar:* Length (when crawling) 28mm. Head shiny, divided medially at crown; clypeus white, with black edges, the black running up between the two lateral lobes, which are of a bright orange-brown colour, covered with white pimply elevations giving rise to black hairs; ocelli black; antennæ black; mouthparts black, edged with white. The whole body porcellanous white, lined longitudinally and transversely with black, giving it a marbled or tessellated appearance; nearly cylindrical, tapering slightly to prothorax, which is narrower than the head, and also the 9th and 10th abdominal segments. Prothorax, with tubercles i and ii united as a pale plate bearing many black hairs. The supraspiracular (iii) of prothorax well-developed, and typical of the other supraspiracular spines. The meso- and metathorax with i absent, ii forming, as in the 1st-9th abdominal segments, fine, bright, orange-brown spines, with many black hairs, the apex paler, inclining to whitish; iii is typical on all the segments—pro-, meso-, metathorax, and 1st-10th abdominals, except the 9th (this carrying ii but not iii, and the 10th iii but not ii), being of a dirty yellowish-white colour with black hairs. From the 1st-9th abdominal segments i+i consolidated, form a mediodorsal spine, yellowish-white in colour, with many black hairs, so that i and iii are similar in appearance, as also are ii and iv+v. A striking black mediodorsal line runs from head to anus, breaking, at each of the mediodorsal tubercles i, to form a horseshoe, running from in front backwards, on the 9th abdominal, i is pushed quite to the front of segment, and is well in advance of ii and not in the same line, as is the case on the other segments. The thoracic segments, as well as the abdominal segments, appear to be divided into one very wide anterior subsegment, carrying the tubercles and one narrow posterior subsegment. The subsegmental incisions are ringed with black, the true segmental incisions appear not to be so, except on the thorax. A spinous structure, in the place of the anal plate, suggests modified tubercle i. *Lateral view:* A moderately well-developed subspiracular flange; tubercles iii placed above, but slightly anterior to, spiracle; the black spiracles deeply embedded in the groove between the line of iii and the swollen flange that carries iv+v; the combined tubercle, iv+v, is placed directly below the spiracles, and forms, on the 1st-8th abdominal segments, a well-developed spine, the base bright orange-brown, the apex whitish, bearing a number of black hairs. These are placed on the swollen white subspiracular flange. Directly below these is a double tubercle (vi+vii), with two white spines, projecting downwards, of which the anterior appears to be the longer, and which is present on each segment, from the prothorax to the 8th abdominal. These also carry black hairs. *Ventral view:* Venter somewhat flattened, whitish in colour, a well-

marked, deep, red-brown medioventral line; prolegs somewhat glassy (a little opaque), with black terminal hooks; the true legs glassy, shaded with black externally, black terminal hook, ring of pale hairs at joints, anal prolegs larger and stronger than the other prolegs. The colour of the thoracic segments, ventrally, is slaty-grey, a little more white and black like the back, but altogether less marbled, that is, the venter of the abdominal segments slaty-grey and unmarbled (most difficult to get a view of the ventral surface). There is a black longitudinal line on the outside of the prolegs. The colour of the venter is inclined to be slaty, nor is the thoracic region really more marbled than the abdominal. *Habits:* Rolls itself in a ring when disturbed; crawls pretty rapidly when actively in search of food, otherwise its habits appear to be rather sluggish, resting on the edge of the leaf which it is eating in full daylight, and slipping down readily to the ground if disturbed. [Larvæ at Draguignan. *May 6th*, 1905.]—J. W. Tutt.

Egglaying of Euvanessa antiopa.—On April 26th, 1907, I saw an *Euvanessa antiopa*, resting on a twig of willow, at about eighteen feet from the ground, and quite out of reach. Its attitude was peculiar. Head downwards, its wings were strongly deflexed, their angle above about 250°, below about 100°. It was motionless thus (so far as could be seen at the height it was) for a quarter-of-an-hour, in the evening it was no longer there. Two days later, a close scrutiny showed that where it was rested were some eggs, but not a full batch. I incline to believe the butterfly had been seized (by the head?) by some spider or other enemy; but it is possible, so far as I know, that this may be an usual attitude in oviposition.—T. A. Chapman. *June 2nd*, 1907.

Egglaying of Eugonia polychloros.—On April 9th, 1907, I found eggs of *Eugonia polychloros* on the way to Carqueiranne, they were near the end of a last year's twig, with shoots of this spring about one-and-half inches long. The eggs were laid closely together on the upperside of the twig, encroaching on the sides, but not beneath, in two patches, a larger and a smaller, the larger about an inch from the end of the twig, the smaller separated by a narrow space, apparently that they might be at the base of the next shoots of the year. The eggs are very like those of *Euvanessa antiopa* in size and colour, all appeared to have exactly eight ribs. The shoot was a horizontal one towards the top of a small sapling, about six feet above one's head, and were detected, by the slight appearance of thickening of the twig, where the eggs were, on looking up into the tree. [These eggs have been photographed by Mr. Tonge.].—Ibid.

Notes on eggs and larvæ of Eugonia polychloros.—On June 24th last, I found two nests of *E. polychloros* larvæ on adjoining elms. They were both facing south, and about fifteen feet from the ground. I cut off the end of the bough containing one of the nests, and found the eggs on the middle of three branchlets, about ten inches from the tip. They were laid along the stem on the north side. The larvæ, on hatching, had evidently started eating from their birthplace, working upwards to the tip of this central branchlet, and when I found them, had also denuded the upper half of the left branchlet of its leaves. All the twigs on which they had fed, and even the cluster of eggs, were densely covered with webbing.—(Rev.) G. H. Raynor, Hazeleigh Rectory, Maldon. *July 4th*, 1907.

Melanic larva of Ellopia prosapiaria (fasciaria).—While beating for larvæ of *E. prosapiaria* (*fasciaria*) in the Tyne valley, near Hexham, on the 18th ult., I secured an entirely black caterpillar of this species, even the head, feet, and ventral area being black. The colour of the ventral surface not quite so deep and decided as the dorsal. As is known, the larvæ vary greatly in coloration, here we get the reddish-brown and a sepia-coloured form in about equal proportions. I only remember once previously seeing a black larva, and obtained it in the same locality. I obtained thirteen larvæ on the above date, they seem scarce this season, but the percentage of melanic larvæ to the other forms, based on a few seasons, will approximate about one per cent. only.—G. Nicholson, 26, Lancaster Street, Newcastle. *June 7th*, 1907.

CURRENT NOTES.

Our valued correspondent, Herr Konst. Freih. v. Hormuzaki, has just published the third part of his *Lepidoptera of the Bukowina*. It contains the remainder of the superfamilies not already dealt with in parts 1 and 2, *viz.*, from the Pyralides to the Micropterygides. All our students of the geographical distribution of the lepidoptera—especially micro-lepidoptera—will certainly have to refer to this work.

Commander J. J. Walker has recently given some interesting notes, in the *Ent. Mo. Mag.*, of some of the rarer butterflies in the "Dale collection," now deposited in the Hope Museum, Oxford. It is to be noted that many of the labels are in Mr. C. W. Dale's handwriting, often referring to specimens taken many years before he was born, *e.g.*, "*Argynnis dia*, 1847," "*Melitaea athalia*, 1802, 1803," "*Chrysophanns virgaureae*, 1824," "*C. hippothoë*, 1824," "*C. dispar*, 1841," "*dorylas*, *Zool.*, 8402," etc. One does not doubt that Mr. C. W. Dale may have had materials in his possession that might serve as a guide, in adding the assumed facts in label form, to some particular specimen to be found in the collection, still, details like these, added from 50-90 years afterwards, must only carry their due weight, and must not be put in the same category as labels placed by the captor on a specimen, and preserved in a collection where the labels could not possibly be shifted.

Mr. A. N. Caudell has recently published (*Proc. Unit. St. Nat. Museum*) a first class systematic review of "The *Decticinae* of North America." A considerable amount of exceedingly well-illustrated detail makes this paper exceptionally valuable.

The Rev. G. H. Raynor has presented to the Cambridge University Museum, the contents of two drawers of his cabinet, comprising the families of *Abraxas grossulariata* and its var. *flavofasciata* (*lacticolor*), which he exhibited at the British Association Meeting, at Cambridge, in 1904, and, with additional specimens, before the Zoological Society (see *Proc. Zool. Soc. Lond.*, 1906, i., pp. 125-133). The insects illustrate the Mendelian theory of heredity which is just now receiving great attention at the hands of the scientific biologists resident at the University.

Among all our lepidopterists, are there any who can give us reliable data on the mode of pupation of *Ruralis* (*Thecla*) *betulae*, also reliable notes on (1) dates of capture wild, and (2) dates of emergence in confinement? We shall also be grateful for any information of the

larvæ feeding, in nature or confinement, on any other plants than plum, sloe, and apricot. Has anyone ever found the larva on birch, or confirmed the statement of Crisp (*Ent. Rec.*, xv., p. 243), that he obtained it from *Quercus robur?* Our information on these two points —foodplants and pupation-habits—is very vague and unsatisfactory.

Mr. E. E. Austen exhibited, at the meeting of the Entomological Society of London, June 5th, 1907, examples of a South African fly, parasitic in the larval stage on human beings and mammals—a true Muscid—hitherto confused with another fly. He said it was rare to find Diptera parasitic on mammals, and gave an account of the various "new" descriptions persisted in by writers on this species.

The last meeting of the Entomological Club was held at The Hand and Spear Hotel, Weybridge, on July 8th, when Mr. G. T. Porritt was the host. It was a cold and cheerless afternoon from the weather point of view, but otherwise the meeting was a most successful one. Supper was served at 7 p.m., when among the members and friends present were—Messrs. B. Adkin, R. Adkin, H. Rowland-Brown, M. Burr, G. C. Champion, A. J. Chitty, H. St. J. K. Donisthorpe, L. Gibb, T. W. Hall, A. H. Jones, W. J. Lucas, R. South, A. Sich, and J. W. Tutt. A most enjoyable evening was spent. The collectors of British insects, used to the rain, snow, and cold of the last few weeks, were charmed with Mr. Jones' account of his recent entomological conquest of Hungary, where the sunshine had been nearly continuous for five weeks, and where the collecting had been magnificent. Our own feelings were that we might have been there to see.

The Upsala celebration of the 200th anniversary of the birth of Linné, May 23rd, 1707, proved a huge success. Many well-known zoologists from Britain were present; among others, Professor E. B. Poulton, who represented the University of Oxford, the Rev. F. D. Morice, representing the Entomological Society of London. Professor E. B. Poulton, we believe, received one of the few decorations conferred on British representatives. We understand that the address by the Rev. F. D. Morice was particularly well received, delivered as it was in the purest Latin, pronounced in the continental manner, and hence clearly understanded by the assembly.

OBITUARY.

Charles James Watkins (Born July 12th, 1846, died May 27th, 1906).—Many of us have learned, with the greatest regret, of the death of C. J. Watkins, for many years a resident at Kingsmill House, Painswick, but who only last year removed to Watledge, Nailsworth, where he had hoped to spend the remainder of his days in the natural history pursuits to which he was so much attached. One of the most delightful of correspondents, no trouble within his power was too great to obtain information or material for the use of his friends, and to him we owe very much for kindnesses received in the course of our own work. Even in late April and early May several letters passed between us, and, although, then, he was soon to undergo an operation at Clifton, there was no thought that it would not, as several previous ones, be entirely successful, and that he would soon be himself again. Fate decreed otherwise. His general ill-health since Christmas had

undermined his usual stamina, and, in addition, it was discovered that, besides the kidney trouble for which he was being treated, he was also suffering from cancer, and, although the operation was skilfully performed, and up to a point was successful, the patient gradually sank and died on the morning of May 27th. Born at Lightpill, in 1847, he removed with his parents to Cap Mill, and thence to King's Mill, and always spoke of himself as a Painswickian. He was a "pin" manufacturer by trade, and his father was one of the earliest to supply entomologists with the special pins we now use for our study. He was a thorough all-round naturalist—a good microscopist, geologist, botanist, as well as a first-class entomologist—studying not only lepidoptera, but most of the other orders. He was an especially good hymenopterist, and had a first-class general acquaintance with coleoptera and hemiptera. Like many other Gloucester boys, he was largely influenced in his school days by his master, Moses Pullen, who inculcated in the minds of many of his scholars a taste for natural history. As an observer he was exact, thorough, and competent, and one could perfectly rely on his statements and observations, backed up as they were by reference to a careful diary, kept over a period of more then 40 years. He was particularly interested in the fauna of Gloucestershire, and took considerable pains in collecting details for the faunistic list to be published in the *Victoria County History* series for that county. We have often alluded regretfully to the fact that he published so little out of his great fund of knowledge, but he always retorted that what he knew was at the disposal of those who wanted it, that, for the rest, ill-health and business left him little time for real relaxation, and that, when able, he liked to be among the plants, birds, and insects in the places he knew and loved so well. He was after all a naturalist rather than a scientist in the modern sense, preferring to know things rather than to know about them, and as such, his contributions to the habits of our insects with which he regularly supplied us for amalgamation in our own work, were always useful, and will be most certainly missed. Our sincerest sympathies are with the widow whom he has left to mourn his loss.

REVIEWS AND NOTICES OF BOOKS.

A Preliminary List of Coleoptera observed in the Neighbourhood of Oxford from 1819 to 1907, by Commander J. J. Walker, R.N., M.A., etc.— This list of the coleoptera of Oxford by Commander J. J. Walker, is very interesting to the student of our fauna, comprising as it does the records of the late Rev. F. W. Hope, as well as nearly all the available captures up-to-date. It is only necessary to glance at it to see what a fine area for collecting it embraces; a radius of seven miles from the centre of Oxford being taken as the limit. In a Synoptical Table at the end of the list the total number of species for Oxford, some 1399, is compared with that of Rochester, which totals 1615 species, but no doubt many more species will be added to Oxford after further researches have been made, and all the species captured have been incorporated. Much is due to the enterprise of Messrs. W. Holland and A. H. Hamm, as well as to the indefatigable compiler himself. We can add the following species taken at different times on our various visits to

Oxford—*Harpalus attenuatus*, *Homalota succicola*, *Thamiaraea cinnamomea*, *Mycetoporus clavicornis*, *Philonthus albipes* and *P. cephalotes*, *Oxytellus inustus*, *Trogophloeus rivularis*, *Soronia punctatissima*, *Olibrus liquidus*, and *Longitarsus lycopi*. To mention a few points which strike us in this list, we should not consider *Xantholinus tricolor* a coast species, having taken it at Wicken Fen, Tewkesbury, Wallingford, Sevenoaks, Chippenham Fen, etc., Dr. Joy has taken it at Streatley, Fowler records it from Gloucester, and it is not uncommon at Rannoch and in the Scotch Highlands generally. *Bembidium minimum*, on the other hand, we have always regarded as entirely a coast species, but we notice it is recorded as generally distributed in the Oxford district. We cannot believe in Hope's record of *Lixus algirus* taken off rushes and water-plants, when it is exclusively a thistle feeder, especially as he speaks of *L. paraplecticus* as only a variety of it, when the two species are totally unlike each other. We do not quite understand the system by which rare species are marked with a single and double asterisk, for example—*Helophorus nanus* is marked with a single asterisk, whereas *H. brevicollis*, one of the rarest species, of which there are hardly any records, taken by Mr. Holland at King's Wier, has no asterisk at all! Again, very common species like *Cryptocephalus aureolus*, *Batophila rubi*, and *Agathidium varians*, etc., have a single asterisk, and a very local and rare species like *Coccinella 5-punctata* also has only a single asterisk, whereas *Anisotoma nigrita*, which is certainly common and widely distributed, has two. However, on the whole, the list is a very useful piece of work, and should be in the hands of all British coleopterists.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May* 23*rd*.—EXHIBITS.—ABERRATIONS OF NOCTUIDS.—Mr. Brown exhibited (1) varieties of *Trachea piniperda* from Oxshott, in some the red markings were dominant, and in others the green; (2) a dark *Agrotis exclamationis* from Folkestone; and (3) a very light *A. puta* from Deal. AN ANT-BEETLE.—Mr. Ashby, a long series of the ant-beetle, *Thanasimus formicarius*, from Oxshott, where it had occurred commonly. *June* 13*th*.—DARENTH INSECTS.—Mr. West, of Greenwich, the rare coleopteron, *Triplax lacordairei*, and the uncommon hemipteron, *Verlusia rhomboidea*, both from Darenth. LARVA OF ISSORIA LATONA.—Mr. Tonge, a living larva of *Issoria latona*, reared from an ovum sent from Hyères by Dr. Chapman. TINEA CLOACELLA.—Mr. H. J. Turner, a specimen of *Tinea cloacella* just taken in Greenwich Park. COLEOPHORID LARVÆ.—Also the living larvæ of *Coleophora discordella*, sent by Mr. Wilkinson, of Workington. STRANGE CHOICE OF FOODPLANT BY LARVA.—Dr. Chapman exhibited a living larva of *Calocampa exoleta*, and remarked on their curious custom of feeding on stale foodplant; several species of larvæ were noted as having the same habit as *C. exoleta*, and, in their final instars, voluntarily changing their pabulum. ABERRATION OF PAPILIO MACHAON.—Also an example of *Papilio machaon*, in which the costa of the forewings was much more arched than usual towards the apex, whilst in another the black inner line of the dark submarginal band was wanting, and the black basal circle of the ocellus was absent.

THE WORLD'S FAMILY MEDICINE.

A family medicine is a necessity. The human body is an intricate piece of machinery which is easily put out of order, and unless the wrong be righted in its early stages a general breakdown is certain. The wise keep the World's Family Medicine always at hand, and this is acknowledged to be

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Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. September 2nd, "Exhibition." Field Excursion:—September 28th, Chingford, Liverpool Street, 9.32 a.m. and 2.8 p.m.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Field Meetings: September 14th, Kew Gardens; October 5th, Fungus Foray.

North London Natural History Society, The Amherst Club, Amhurst Road, N. (No notices.)

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec. H. B. Sweeting, 6, The Elms, Dingle, Liverpool.

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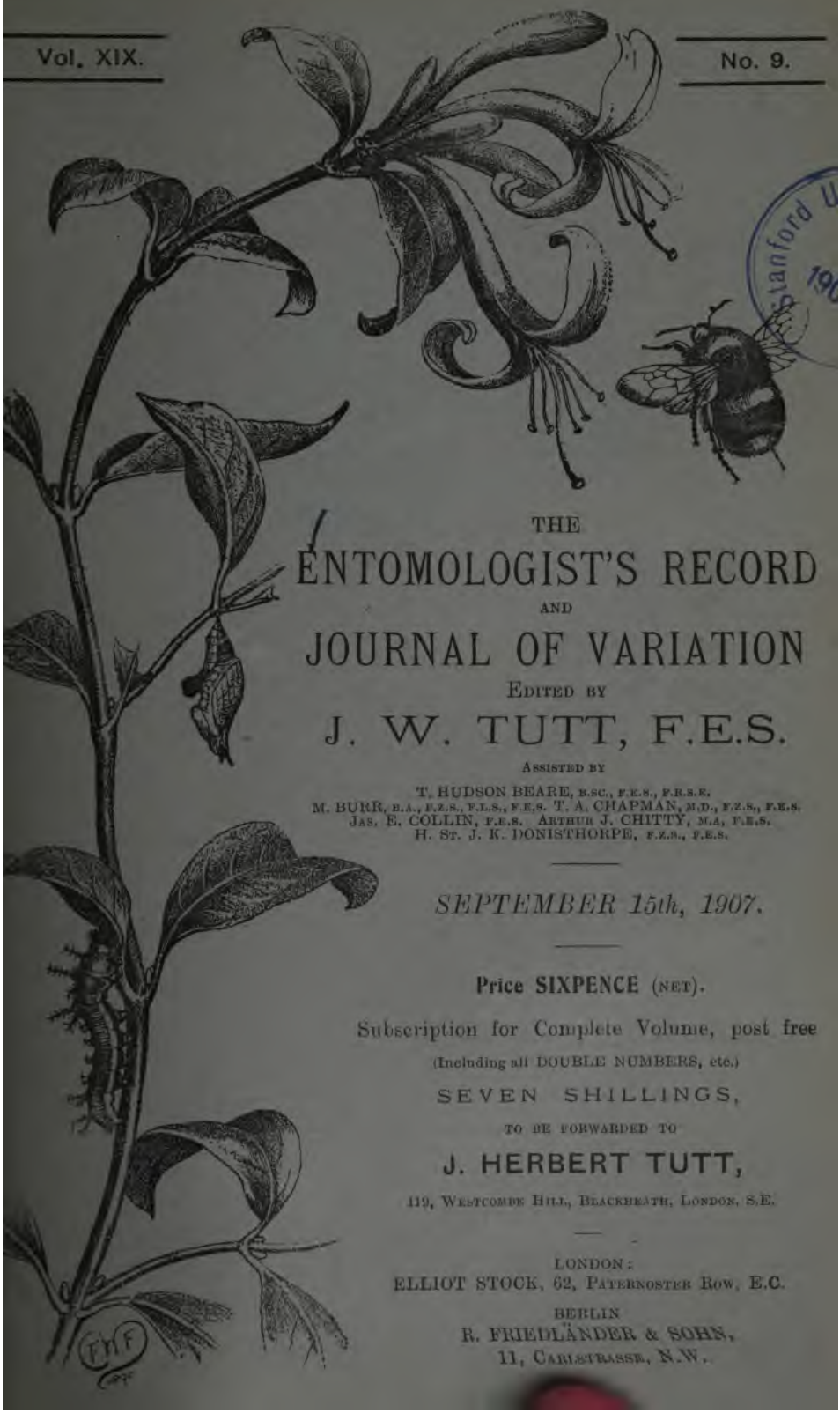
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Lepidoptera of the Basses-Alpes—Allos to Lac d'Allos.

By J. W. TUTT, F.E.S.

Continuing my notes in the preceding number, I may say that, on August 10th 1907, I set out seriously to find Mr. Powell, and made straight for the Lac d'Allos. This piece of country is quite delightful. It is of the type so characteristic of those arid Basses-Alpes, with their black shaly beds, worn out along the valleys into great elephant-back curves that are seen possibly nowhere else in Europe. The fauna and flora of the lower part of the valley is more of a lowland type, but a rise of some 700 or 800ft. leads one to a long walk by the side of the river, on a slippery shaly path, and, when one leaves this and strikes the limestone beyond, the fauna and flora change, as if by magic, and a mile or so further, one reaches a pretty waterfall, where one can say, almost definitely, sub-alpine conditions begin to prevail, and from thence up to the lake, at above 7000ft. elevation, the alpine conditions get more and more marked. I tried many other walks up and down the valley, none of which were really very successful, and I should plump for the walk up to the lake and the heights above, as being the best collecting-ground in the district. The long grind from Allos to the Lac d'Allos is good collecting-ground almost all the way. It rises from 4675ft. to about 7400ft. The guide-books say that the journey can be done in two hours; personally, for entomological purposes, to get up there, I prefer eight, although three is long enough to come down. Possibly *Pontia daplidice*, *Colias hyale*, and *C. edusa* are among the most widely distributed species in the lower part of the journey, whilst equally generally distributed, and found almost everywhere here, are *Pararge maera*, *Epinephele lycaon*, *Issoria lathonia*, *Melitaea didyma*, certainly of the single-brooded, higher-level form of the species, *Erebia neoridas*, at this time, almost all males, and *Melitaea phoebe*, the large fine alpine form. Some way along this path were a few wych elms and an abundance of blackthorn; here we found a few worn *Edwardsia w-album* and *Nordmannia acaciae*, the latter in rather better condition than the former, and very busy about the blackthorn shoots, or, later in the afternoon, sitting on the flowers in the meadow between the trees and the stream. This meadow was a splendid corner for many insects, of which one may note *Melitaea didyma*, *Melanargia galatea*, *Gonepteryx rhamni*, *Colias edusa*, *C. hyale*, *Issoria lathonia*, *Aglais urticae*, *Pyrameis cardui*, *P. atalanta*, *Urbicola comma*, *Agriades corydon*, *Coenonympha pamphilus*, *Hesperia alveus*, *Adopaea thaumas*, *Loweia gordius*, going over, *Polyommatus icarus*, and *Thymelicus acteon*, also passé, whilst a little further on, where the road reached the level of the stream, we met, for the first time, *Erebia euryale*, in numbers, and a sprinkling of the larger fritillaries, *Argynnis aglaia* and *A. niobe*. Here, too, strangely, a few male *Aporia crataegi*, not at all in bad condition, occurred; one is not surprised at late transparent females, but these (four) were all males, no female being seen, whilst a specimen or two of *Limenitis camilla* showed the species past its prime. *Brenthis amathusia*, too, also worn, still persisted in moderate numbers, and *Melitaea phoebe* was frequent. Near here, too, a splendid large butterfly swiftly moved along the path, and, suddenly sailing back in straight line, a fine *Euvanessa antiopa*, quite recently emerged, was in the net. On the torrent-slope here, also, I worked some time for a short series of the large and fine

SEPTEMBER 15TH, 1907.

Coleophora ornatipennella, which was not altogether common, whilst a few *Stenoptilia pterodactyla* (*fuscus*) were also taken, and, on the level just above, *Plebeius argus* with a few blue ♀s was rather scarce, and going over. Here and there, too, a *Polygonia c-album* was to be found, whilst *Dryas paphia* in poor condition, and *Argynnis niobe* and *A. aglaia* in first class order, were abundant. The spot where one leaves this bushy path and strikes across the steep slope is the outpost of *Pontia daplidice* and *Limenitis camilla*. Here, by the stream, a specimen of the latter was generally to be found, and several of the former were always racing madly on the slopes at this corner, but beyond this one was rarely seen, although rather farther on, where one crosses a little stream, the solitary male *Gonepteryx cleopatra* seen in the district, was observed. Along under the bare, steep, rounded, black, shaly rocks that rise above the footpath for a mile or more, was nothing, and one suspects that the pine-wood on the other side is much too well grazed to be productive, although it was not explored, but, once past the corner where dozens of little springs bubble from the ground, and out on the steep limestone slopes, among the wild gooseberry-bushes laden with ripe fruit, in the tall thistle-beds, the common Argynnids—*niobe* and *aglaia*—and Vanessids—*cardui* and *atalanta*—find a rich feast, and, at the end of the path across this steep slope, sub-alpine conditions and a different fauna commenced to prevail. *Erebia neoridas* was seen no more, and most of the other low-land species failed. A fine spring of clearest water, surrounded by tall heads of cat-mint, was most attractive. Here were the first examples seen of *Heodes virgaureae*, with bright golden ♀s, some, I am thankful to say, not yet past their prime. Here, too, was an abundance of *Adopaea lineola*, which also gave some good examples, though dozens certainly were not fine, flying with *Coenonympha iphis*, a strange pairing observed here being a ♂ *A. lineola* coupled with a ♀ *C. iphis*. I tried to out-manœuvre them without separating them, but failed, but it looked as if the hold obtained by the ♀ of the ♂ clasps was of the flimsiest. *Plebeius argus*, *Agriades corydon*, *Powellia sao*, were captured on the flowers with *Klugia spini* and *Polyommatus eros*, but *Aricia astrarche*, as all through the district, was rare. On to the lovely waterfall the country and fauna were quickly changing, *Erebia goante* appeared soon in numbers, *Parnassius apollo* of large size swung lazily over the rocks, and then *Erebia tyndarus* appeared, whilst, within a quarter of a mile, all these species became abundant. A steep, damp slope, where the irrigating streams overflowed, with tall thistles several feet high, was a marvellous collecting ground. There were absolutely hundreds of *Argynnis niobe*, both with and without the silver spots on the undersides, and *Argynnis aglaia* was, if anything, more abundant, *Erebia tyndarus* equally so, and *E. goante* hardly less. *Colias edusa* and *C. hyale* still swung along, mixed here, however, with *C. phicomone*, of which the yellow males were more abundant than the white females. *Coenonympha iphis*, rather larger spotted beneath than the Dauphiny race, was abundant, and so was *Pieris rapae* and *Urbicola comma*; *Parnassius apollo* was quite frequent, and so was *Hesperia alveus*, and here, too, was the outpost of *Melanargia galatea*, of which several rather poor specimens were seen. *Pararge maera*, *Coenonympha* var. *darwiniana*, *Melitaea phoebe*, *Polyommatus escheri*, *Aglais urticae*, *Issoria lathonia*, *Pyrameis atalanta*, *P. cardui*, *Gonepteryx rhamni* made up the tale.

Beyond this was another delightful stretch, more heath-like and moorland in character, and easier to work than the steep slope just left, where the long grass, flat sloping stones, and slippery slopes made one's back come in occasional and unnecessary contact with the earth, and a bruise or two was something in the shape of a necessity. Here the "blues" of the district were frequent—*Polyommatus eros*, *P. damon*, *Agriades corydon*, *Nomiades semiargus*, *Plebeius argus*, *Aricia astrarche*, and a single worn *Cupido sebrus*, whilst still *Coenonympha pamphilus* occasionally occurred, with an abundance of *C. iphis*. Beyond this, up to the lake, there was little to do, and, at the lake, full alpine conditions prevailed, as may be expected at 7400ft. elevation. On the path directly above the marvellous outflow of the lake, where, after passing through some 500 feet of ground separating the lake and outfall, the stream breaks forth with remarkable power, and, falling cascade-like, rushes away to make fertile the almost flats that we have just passed, and every possible inch of which has been put under cultivation, one finds many insects. The rocks here again are the home of *Erebia goante*, and here, too, I captured the first male *E. glacialis*, small, it seemed to me, but black as night, and in good conditlon. Is this insect *glacialis?* I found, on the nettles, many webs of larvæ of *Aglais urticae*, and then, turning a corner, suddenly came in full view of the lovely Lac d'Allos, some four or five miles in circumference at a guess, surrounded by slopes running up to the mountain-peaks from 1000ft. to 2000ft. above, and surmounted by the lofty Mount Pelat 10000ft. in elevation. Here, on the margins of the lake, I found a small brood of *Chrysophanus hippothoë*, only just emerged, the females varying from black with copper tinge to a strongly coppery form, the males bright with black border, and not a trace of any purple tinge, and of rather small size. I went on to the little hut where refreshments are to be got, and discovered that Mr. Powell and his friend had been gone a week. I was on the mountains separating the Basses-Alpes and Alpes-Maritimes, and had reached, at least, the point at which I had intended coming, and then found that my friend, who was to have piloted me, had disappeared. The rest of this unhappy tale had better not be told, suffice it to say that, a week later, whilst my friend was lunching in an inn at Colmars, I must have sauntered through the street past the inn, and we went in different directions, and failed to see each other. It was now 4 p.m. I had been eight hours on the warpath, and after making arrangements to stay at least a night at the lake, I returned to the Auberge Pascal. The next day was largely occupied in setting some two to three hundred insects that came down the mountains in a zinc box, hat, and a few glass-bottomed boxes. They look very well though! How I longed, on the way down, for a couple of hundred of glass-topped or -bottomed boxes, to tackle the moths that seemed to abound everywhere. I did pick up a few that perfect evening, when, not a breath of air stirring, the alpine flowers at dusk were literally alive with Gnophids, Euboliids, and other things. At 7.30 p.m. I walked into the Auberge, had a bath, ate my dinner, and went to bed, sleeping the sleep of the tired till awakened by the sun and the swallows about 7 a.m.

Lepidoptera of the Basses-Alpes—Lac d'Allos.

By J. W. TUTT, F.E.S.

The lovely Lac d'Allos is at an elevation of between 7000ft. and 8000ft., yet far above this, for quite 2000ft., the alpine pastures roll free, with lovely stretches of wild flowers and capped by rocks of surpassing grandeur.

I had made up my mind for a day here, and having prospected, as already noted, on the 10th, I collected all the way up the valley, and arrived at the lake about 5 p.m. on the afternoon of August 13th, having been promised a comfortable shake-down by the hostess of the shanty here at my previous visit. I found out, however, all through this trip, that what was proposed did not always come off. A large party of tourists from Marseilles were in possession, including three ladies, the best quarters in the little alpine hut were already commandeered, and, after having supper with a company whose lively habits would have helped to make the fortune of a professional paragrapher, I had to turn in the straw with a dozen others, in the long, roomy, and not altogether uncomfortable, quarters of the hut. I turned out early next morning, and, after a wash in the lake, went off for a stroll on the slopes before partaking of a substantial breakfast, of which trout from the lake, and fresh milk were two very pleasing features.

Nothing was on the move till 9 a.m., for the night had been cold, and a specimen or two of *Brenthis pales* picked up were quite numbed and unable to fly, but as the sun got more power, the flowery slopes were alive with insects. Not that the number of species here was a large one, on the contrary the number was small, but the species present were mostly in great abundance. First and foremost was *Chrysophanus hippothoë*, by the lake side, the males brilliant and sparkling in their freshness, the copper bright, the black edging deep, but with no trace of purple tint, and with none of the black shading that leaves, on the hindwings of the upperside, an apparent band of copper colour, representing that of the females, and which we strangely find in the examples at the extreme north and south of its European range, *viz.*, in Scandinavia (Bossekop) and Spain (Moncayo). The females were of two forms, one almost uniformly fuscous-brown, the other with the centre of the forewings coppery. A lovely black female of *Loweia subalpina*, Speyer, supposed by many to be an alpine form of *L. dorilis*, was also taken, but, although search was made, not another example was discovered. Down by the lake side also, as well as on the slopes far above, almost every flower was occupied by a *Brenthis pales*, there must have been many thousands, even in a comparatively limited space. The females are brown, but particularly pale, especially towards the centre of the inner margin of the forewings, only one dark one of the *napaea* type was observed, and, although many were worn, others were in prime condition. Next to *Brenthis pales*, *Colias phicomone* was the commonest species. Many specimens were getting thinly-scaled and worn, but others were in the pink of condition, the males showing considerable variation, some with yellow forewings and only the nervures and marginal band dusky, others with the forewings entirely clouded except for a patch on the inner margin; the females were more uniform, with delicate pink fringes and heads, almost exactly of the same form as the specimens from Larche, on the

northern side of the Mt. Pelat range. High as it was, a male *Colias hyale* occasionally threw itself across a slope with amazing speed, whilst *C. edusa*, of large size and rich colour, pulled itself up quickly at a flower and gave the chance of a shot, often successful. *Argynnis niobe*, too, was in grand form, many of the undersides with fine silvery spots. *A. aglaia* appeared to be outreached here, for it rarely occurred at this elevation, and was almost as rare as *Gonepteryx rhamni*, of which one reached quite 8000ft., and more so than *Pyrameis cardui*, which occasionally flew across. *Urbicola comma* seems to be independent of elevation if it can get the ground it wants, and so does *Hesperia alveus*. Only four species of "blues" were observed at this elevation, *Polyommatus eros*, which I have looked upon as quite the queen of the high mountains of the Basses-Alpes, for it was at Larche, in 1900, I first found the females of this species in abundance, and here above the lake I found several *Plebeius argus*, a pretty form of female, shot with blue, and a single worn female *Nomiades semiargus* completed our captures of this group, except that a few *Polyommatus donzelii* were taken, as one feels should be the case, Donzel having been, in his day, the student *par excellence* of the Basses-Alpes' lepidoptera, and this species was named after this celebrated collector. Like most other species *Anthrocera exulans* seemed to be over, for only a few worn females were seen, but here the insect is only found at specially high elevations and I may not have reached its headquarters, as I certainly did not those of the pure black *Erebia glacialis* var. *pluto*, which Mr. Powell says abounds here. As a matter of fact, I only found one Erebiid species really common above the lake, *viz.*, the ubiquitous *Erebia tyndarus*, although *E. goante* and *E. gorge* were locally not rare, *Aglais urticae* flew at the highest point reached, and larvæ at the the lake side were abundant. A small race of streaked *Setina aurita* was not uncommon, the lovely blue-green *Calastia auriciliella*, with its orange fringes was common, and one of the *Psodos* species, locally abundant. *Crambus radiellus* was generally distributed, and a fine pair of *Gnophos glaucinaria* (?), with well-marked grey male and ochreous female, was captured *in cop.*, as well as other females; a rather small, ill-marked, silky race of *Gnophos obfuscata* was also not infrequent. A pair of a *Stenoptilia*, which I cannot separate from *bipunctidactyla*, was taken near the lake. There were many other species, no doubt, of which I have no example, and which I do not carry in my memory, but Mr. Powell has promised that some day he will write us up the fauna of this delightful district, so that my shortcomings may possibly prove less serious than at present they may appear.

The Lepidoptera of the Basses-Alpes—Colmars to Col d'Allos.

By J. W. TUTT, F.E.S.

The country immediately round about Allos is just lovely for a lazy man, but mid-August, one suspects, is too late for an entomological visit. I tried the country up as far as the Col d'Allos, leading over to Barcelonette and the Ubaye valley, where I spent a most delightful month in 1900, the notes of which, however, have never yet been published. It may be well to note what one met here, separately from what was found in the more alpine regions of the Lac d'Allos,

although these was really very little except the usual common species of the district, *Pontia daplidice*, *Colias edusa*, *C. hyale*, *Pararge maera*, *Erebia neoridas*, *Issoria lathonia*, and, most abundant of all, *Argynnis aglaia* and *A. niobe*. But the district was a lowland one compared with those already noted. The poverty of this district undoubtedly is due to the geological (and consequent floral) conditions. Here and there a piece of limestone breaks out of the interminable shales, and then, as if by magic, a new insect fauna is seen—*Melanargia galathea*, *Epinephele lycaon*, *Melitaea didyma* (the females of a fine dark mountain type), *Aglais urticae*, *Urbicola comma*—but on the whole the country is exceedingly poor in insects. Two or three newly-emerged *Euvanessa antiopa* were observed, near La Foux, and the stalking of these grand fellows gives an abundance of sport, but the only one that I captured was a grand female, so deeply engrossed in sucking the nectar from a large thistle-head that she fell a most easy prey. Another district over which I roamed one day, and that was equally disappointing, was that known as the Vacheries. It evidently acted up to its name, for it was covered with cattle, and the cause of the scarcity of insects was evidently due to them, for there was nothing really seen in a long walk that was not common everywhere, *e.g.*, *Erebia neoridas*, *Pontia daplidice*, *Colias edusa*, *C. hyale*, *Argynnis niobe*, *A. aglaia*, etc., until we dropped over into the valley leading up to the Lac d'Allos, when *Nordmannia acaciae*, and a few insects already noted as occurring in that valley, were met with. Going down the road produced better results. On the steep slopes between Allos and Colmars, as well as on the lower ground by the banks of the Verdon, was an abundance of species, although nothing much that had not been seen elsewhere. Taking these in order, one could, almost as soon as one was out of the village, begin to ascend the slopes, and, serious as they look from the road, are, attacked in this way, really rather easy to work. *Erebia neoridas* was here in swarms, *Anthrocera fausta* and *A. corniolica*, of beautiful forms, were more sparingly represented, *Pontia daplidice* was both fine and abundant, *Melitaea didyma* frequent, but for the rest most of the species were distinctly *passé*. Those particularly noticeable were *Hesperia carthami*, *Loweia gordius*, *Nomiades semiargus*, *Cupido sebrus*, *Brenthis amathusia*, *Adopaea lineola*, *A. thaumas*, *Thymelicus acteon*, *Powellia sao*, *Melanargia galathea*, and *Epinephele lycaon*, the females of which have particularly well-marked, elongated, ocellated spots on the forewings. *Hesperia alveus*, *Urbicola comma*, *Melitaea phœbe*, *Pararge maera*, *Polyommatus icarus* ab. *icarinus*, *Aricia astrarche*, *Agriades corydon*, *A. bellargus*, *A. damon*, *Coenonympha pamphilus* occurred everywhere, and were usually in fine condition, whilst the flowers were frequented by an abundance of *Colias edusa*, *C. hyale*, *Gonepteryx rhamni*, *Issoria lathonia*, etc. Anthrocerids were certainly over, *Anthrocera achilleae*, *A. ochsenheimeri*, *A. lonicerae*, *A. transalpina*, a few of each rather worn, being the only species besides those already noted. *Melitaea athalia* (?) of the mountain form was frequent, but worn altogether beyond cabinet stage, and only captured for reference. *Leptidia sinapis* was also pretty generally distributed, but not at all common. *Polyommatus escheri* was already over, also *Klugia spini* in the lower levels, although towards the lake the species was still in very fair condition. Here and there on the slopes

Aspilates gilvaria was very abundant, and occasionally one saw a few other Geometrids. Down near the river, the old road, now disused, is overgrown with the food of *Papilio alexanor*, and it was a grand treat to see the female fly up and down in long, undulating curves as she selected the spots suitable for egg-laying. Here, too, were clumps of the coarse, prickly *Ononis*, from which I disturbed what I assume to be *Marasmarcha* var. *tuttodactyla*, but the species swarmed on a small dwarf smooth-leaved species of *Ononis* that was growing on the other side of the road a little nearer Colmars, and a little Gelechiid, black with a white transverse stripe, that I have not yet named, was also abundant. There were really lots of things to keep one busy at Allos. Only once before, *viz.*, in 1897, when I visited Susa, did I bring home so large a bag or so varied an assortment of insects, as in 1906. But, after all, as I said at first, I was too late for satisfactory work, and I still hope that Mr. Powell, who knows this district in a way that few lepidopterists perhaps know any other district of Europe, will find time to give us his notes thereon. It is a lovely country, separate and isolated, free from tourists, and practically unknown, where much work can evidently be done, but where one's visit should be paid in late June and early July.

Further notes on Trochilium andrenæforme, Lasp.

By Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S.

Mr. Percy C. Reid states (*anteà*, p. 102) that, in his opinion, the construction of the "cap" which closes the mine of a full-grown larva of *Trochilium andrenaeforme* can readily be explained. I should like to know the views of other entomologists on this point.

Since the publication of my original notes on this species (*Trans. Ent. Soc. London*, 1906, pp. 471-482), I have been able to examine a number of mines containing living larvæ. My conclusion is that the mine is only closed in two ways, that of the immature larva, and that of the larva which is destined to become a moth in the summer succeeding the formation of the "cap." At some periods of its existence the larva appears to live between the bark and the wood, but I have found quite young larvæ in the centre of twigs of the foodplant. Young larvæ, and larvæ that are halfgrown, never make a "cap." Their presence in a twig or branch can generally be detected by the blister-like swelling of the bark, usually with a small fissure in it. The raised portion of the blister is not separated off from the rest of the bark. The larva in its final stage apparently makes the "cap" referred to above. This "cap" is a genuine operculum. That is, it is a more or less circular piece of bark which can be readily removed, and which apparently operates as a covering to the opening of the mine. When this "cap" is removed, the mine has the very characteristic appearance which all old mines (from which the insect has emerged) of *Trochilium andrenaeforme* show. In those cases where the insect emerges from a mine which lacks the "cap," its absence can be explained by the operculum having been accidentally removed.

Lepidopterological notes from Freshwater.

By RUSSELL E. JAMES.

Since Mr. Hodges discontinued his interesting notes on the Isle of Wight, one has heard little of Freshwater, and some notes on a three weeks' visit may be of interest. With his usual generosity, Mr. Hodges posted me well up beforehand, so that I started for Totland Bay on July 12th, with every prospect of a good time. The fine weather began simultaneously, and I just found the good local species coming out with a rush. Totland Bay is a little farther than Freshwater from the best grounds, but is far pleasanter to stay at, especially when one has small children, who reckon on a sandy beach. Immediately upon arrival, I quite unexpectedly met Mr. W. J. Kaye, who was bent on taking a quiet holiday before starting on an entomological trip to Trinidad.

The display of a fine lot of *Acidalia humiliata* and *Setina irrorella*, however, which I took before breakfast on my first morning, roused his enthusiasm for British field work again, and the holiday henceforward proved less "quiet" than he had anticipated. *A. humiliata* daily increased in numbers in its special locality until July 20th, when it began to get worn, and by the end of the month was over. My last visit on August 2nd only showed two very worn females. It is excessively local, but I should imagine it has gained ground since Mr. Hodges first discovered it. Moreover, as only a few yards of its special spot are workable, it should be quite safe from over-collecting. As a matter of fact Mr. Kaye thought none of it looked workable, and declined to accompany me. He took a few, however, by the much more laborious means of working in a boat from below.

The other great Freshwater insect, *Agrotis lunigera*, also at least maintains its numbers. This species was only just starting, too, and the first night (July 13th) produced eleven specimens. The following night 44 turned up, and then I did not treacle the Downs again until the 20th. On this night, had I cared, I could easily have taken 500, or even more. I had 70 bunches of treacled hemlock, and every one had three or four on, several running into double figures, and when I left, with every box full, at 11.30 p.m., they were still coming on thick. All these flowers were placed within six feet of the cliff edge, and a fence running back inland, which I treacled the same night, did not produce a single specimen, although other species were common enough. In the matter of flowers, I found white ones were much more remunerative than other colours. On the last night, nearly running short of my supply of hemlock, I used yarrow, ragwort, and hemp-agrimony as well. The yarrow proved almost as attractive as the hemlock, but on the ragwort and agrimony, there was scarcely a quarter as many moths as on the others. This was the more remarkable, as, being an excessively cold and windy night, the thicker ragwort and agrimony foliage offered much more shelter to the feeding moths than either of the others. These cliff species stand a lot of "weather." On this last night (July 31st) the hemlock stems were snapped again and again, getting shorter and shorter as they were cut and stuck up afresh; and the temperature was so low, that at 11.30 p.m. I could scarcely box the moths for cold hands. Yet I selected 60 fine *A. lunigera*, and left many others, whilst *Xylophasia*

polyodon and *Caradrina taraxaci*, with a smattering of other things, were in numbers, and still coming when I left.

Strange species visit the Downs on a good night. *Noctua festiva* was always common, and *Habrosyne derasa* fairly so; but more remarkable were *Hylophila prasinana* and *Boarmia repandata*. Strangest of all was a worn female of *Acosmetia caliginosa*, on July 20th. This puzzled me considerably, and for some time I had vague ideas of an addition to the British list. I was only familiar with the male, but a visit to South Kensington soon settled my doubts. *Agrotis lucernea* was unaccountably absent, one fine specimen on the 14th being the only representative, and *A. cinerea* (a nice whitish form) was remarkably late; three very decent males turned up on July 20th, and odd ones on the 13th, 14th, and 24th, the last in quite good condition.

During the first few days the moth of the moment, however, was *Agrotis corticea*. It already wanted picking over for condition, but was in countless numbers and great variety. Contrary to one's expectations for a chalky district, dark forms were more numerous than pale ones, and some very striking varieties were taken. On July 20th, a specimen was found eagerly feeding on treacle, although only just emerged, with wings quite undeveloped. I boxed it and left it quietly on the ground, and in half-an-hour it was fully expanded.

These are the more interesting moths taken at treacle on the Downs, but among many others, the following occurred: *Hadena dentina* (a nice pale form, commonly), *Noctua rubi* (very ochreous), *Xylophasia sublustris* (three, July 31st), *Mamestra anceps* (on the earlier nights), nice white forms of *Miana bicoloria*, and occasional *Neuria reticulata*. *Caradrina ambigua* never occurred, but all the four common species of the genus were in evidence, especially *C. taraxaci*.

Treacle in a wood bordering the marsh near Freshwater was only tried once (July 27th), and attracted *Craniophora ligustri*, *Thyatira batis*, *Habrosyne derasa*, *Triphaena fimbria*, *Agrotis corticea* (one), *A. nigricans*, *Apamea gemina*, *Xylophasia sublustris* (about a dozen), *X. hepatica*, *Lithosia lurideola*, *Leucania straminea*, *L. conigera* (in plenty), numbers of *Caradrina taraxaci* (more on ragwort than on trees), *Rivula sericealis* and *Rhodophaea suavella*.

The neighbouring marsh was worked at dusk more frequently. *Acidalia emutaria* was almost over, five specimens on July 16th being all I took, and although these were in fair condition, I saw none afterwards. Mr. Kaye, however, took a couple the following night. Odd *Toxocampa pastinum* were taken on the 16th by Mr. Kaye, but I did not find their headquarters until the 21st, when I netted 25, and Mr. Kaye another dozen, in a grassy field where the foodplant grew freely. This ground was all cut the next day, and, with the exception of an occasional specimen in the marsh, *T. pastinum* was practically finished. As the species rarely comes to treacle, it is worth mentioning that Mr. Kaye took a couple on some small posts that he had treacled, the night after the grass was cut. *Leucania straminea* occurred at dusk in the reed beds in fair numbers. Many were "bald," and they were, moreover, difficult to distinguish on the wing from the much commoner *L. impura*, but, in the end, about a dozen good ones were taken. *Nonagria geminipuncta* pupæ occurred in the same place, especially where the reeds were growing close into the wood. The larvæ apparently always entered fresh stems for pupation.

Although I found a good number of larvæ in the upper workings, I never found a pupa. All the pupæ were found in large stems close to the ground, and, in the end, I found the best way to work was to ignore the yellow leaves, and simply examine, on hands and knees, every well-grown stem. The holes where the larvæ entered were easily found, and just above them the brown discs, where they had almost gnawed through before pupating, leaving only the merest film for the moth to penetrate when emerging. Still more interesting is the curved hood the larva forms with reed gnawings and silk immediately above the opening, so that the escaping moth is automatically impelled in the right direction. Wellgrown reeds were none too common, and, in consequence, nearly always contained one or two pupæ, frequently three, twice five, and once six. In some of these crowded stems, the top tenant below a "knot" had scarcely an inch in which to pupate. The "hood" above referred to effectually protected the pupa below from any overhead disturbance.

Crambus selasellus, which I had not seen since I took a series at Chippenham Fen eight years ago, was common in the marsh nearer towards Yarmouth, and *Rivula sericealis* and *Ebulea crocealis* were not rare on the edge of the wood. Plenty of *Enodia hyperanthus* among the reeds again recalled Chippenham.

Several *Gillmeria ochrodactyla* and a number of *Chortodes arcuosa* occurred whilst working for *Toxocampa pastinum*, and, amongst a crowd of common woodland species and *Chilo phragmitellus* that flew over the reeds at dusk, odd *Cymatophora duplaris* and *Phorodesma pustulata* were netted; also one or two *Lithosia griseola*.

Returning to the downs, by day *Phycis subornatella* swarmed, and amongst them *Hypochalcia ahenella* and *Homaeosoma binaevella*, while, later in the month, *Botys flavalis* got up from the short turf at every step. On the cliff slopes, where workable, *Ennychia cingulata*, *Herbula cespitalis*, and *Pyrausta ostrinalis* were plentiful, *Stenia punctalis* rather scarcer, and occasional *Acidalia marginepunctata*, and very pale *Gnophos obscuraria*. Towards the end *Ægeria ichneumoniformis* occurred, the first of which I found in my net by chance. After this I only had two suitable mornings for working it, and took four more and missed another. I failed to find it by sweeping, and those taken I got by sitting still and watching patches of bird's-foot trefoil. The clearwing flight is soon distinguished amongst the host of flies. *Polyommatus corydon* flies on these slopes, *Satyrus semele* on the downs above, and a few *Mesotype virgata* occurred among the gorse bushes.

Setina irrorella swarmed at first, and justified its name of "Dew Moth" by flying freely and fairly strongly at 6.30 a.m. It was moderately active during the day, and again flew freely at early dusk. I never saw a female fly, and the males never strayed many feet from the cliff edge. They were most abundant on the slopes and wherever the ground was broken and the grass longer. I failed to detect any variation, except in expanse, but in this they varied greatly, some males being of immense size. They lingered on till the end, and I saw several specimens on my last morning (August 2nd).

In a hollow on Afton Down, where the white horehound grew, *Wheeleria migadactyla* (*spilodactyla*) was in great abundance on July 21st. On the first patch I came to I boxed three dozen without moving a foot, and then contented myself with taking pupæ. They

were in immense numbers on every plant, but so wonderfully in harmony with the leaves that, although in full view on the top surface, it was some moments before I found the first. When once seen, however, there were more than enough for my wants on one small patch, and larvæ also were still feeding—some quite small. As some of my pupæ gave imagines as late as August 14th, these small larvæ would probably keep the insect going into September. *Cledeobia angustalis* also occurred here, and one or two worn *Homoeosoma binaevella*.

The only other form of collecting was dusking in the lanes at Totland, especially up the Alum Bay Road. Here the hedge-bedstraw abounded, and for the first few days *Anticlea rubidata* was plentiful, but Mr. Kaye had found it still commoner before my arrival. It speedily became worn, however, and was gone after the first week. We both found it very sluggish and hard to beat out by day, whilst *Melanippe rivata* flew out at the least touch. This latter species was very abundant and lasted longer than *A. rubidata*, and a number of other Geometrids also occurred, *Acidalia imitaria* and *Melanippe galiata* perhaps being the best. Showing the lateness of the season, a very fair *Arctia villica* was seen on July 23rd, and *Euchelia jacobaeae* was flying in good condition at the end of the month. Odd *Hecatera serena*, *Nola cucullatella*, and *Eupithecia isogrammata* occurred on fences, and *Emmelesia unifasciata*, *Cleora lichenaria*, and *Cilix glaucata* came in the house to light. The only other oddments of interest were a few *Triphaena interjecta* flying at early dusk, *Cidaria pyraliata* and *Aphomia sociella* on ragwort blossom, and *Pseudoterpna pruinata* on Colwell Common. A nearly pure white *Scoparia* occurred on the cliffs, probably a form of *S. dubitalis*, and on some small willows *Dicranura vinula* and *Notodonta ziczac* larvæ and one *Leucoma salicis* pupa were found.

Although the season was late in the island, it was still later in the New Forest. My first visit was on July 17th, when I went across by early boat, had an hour or so at Holmsley, and then on to Ringwood. At Holmsley, under ideal conditions, I saw two male *Dryas paphia* and half-a-dozen *Limenitis sibylla* just out, when, normally, they should be almost going over. The same day, at Ringwood, *Eulepia cribrum* was still hanging on, about a month late, and several quite good ones were picked out. *Anarta myrtilli* was abundant over the heather, and *Nemeophila russula*, *Lithosia mesomella*, *Acidalia straminata*, and *Pseudoterpna pruinata*, occurred sparingly. *Heliothis dipsacea* had the usual very dark upper wings one finds in this peaty district, so different from those of the Tuddenham specimens. Treacle, the same evening, at Brockenhurst, produced a few things, of which *Leucania turca*, *Moma orion*, and *Eurymene dolabraria* were the best; several *Thyatira batis* and *Melanthia albicillata* were netted at dusk, and a larva of *Asphalia ridens* was found on an oak-trunk.

Next morning, before going back to Totland, I went to the *Anthrocera meliloti* ground, and found them quite common, but hard to find. They sit on the undersides of leaves and grass blades, and I found the best way to search, was to sit down and look carefully round sideways for a few yards, when they could easily be seen at rest. In spite of a bright sun, I only saw one fly, and then for only about a yard. This sluggishness is a safeguard, but, in spite of it, the species

could scarcely hold its own, were not its headquarters in private ground. The workable spot is happily only an overflow. I found one professional on the ground, and was informed by a labourer that he had "lived" there for a week, and had taken some 600 specimens! *Bupalus piniaria* was still about, and a collector I met showed me *Cidaria picata*, which, I believe, is new to the New Forest district.

At Holmsley again, on the 24th, the big butterflies were still very backward. *Limenitis sibylla* was getting commoner, but *Dryas paphia* was scarce, the only female taken or seen being a fine var. *valezina*. *Argynnis adippe* and *A. aglaia* both occurred singly, and a nice *Cleora glabraria* was found on an oak-trunk. On August 5th, *D. paphia* females were still exceedingly rare, and *L. sibylla* and *D. paphia* males still in good condition. On this day, I saw the first fresh *Gonepteryx rhamni* and the first *Eugonia polychloros*, although one or two hybernated specimens of the former were about as late as July 18th.

I had been staying at Brockenhurst on my way home since August 2nd, but did not do much systematic collecting, as I was with motoring friends. Two nights' treacling was a failure, except for two *Hypenodes albistrigalis* (which I wanted badly), and I was told that the "crimsons" were not out. A few dark *Gnophos obscuraria*, *Selidosema plumaria*, and *Crambus pinellus*, were netted at Setley Plain on the 4th, and *Heliothis dipsacea* was seen, but missed, the same day. At Burley, an odd *Psilura monacha* was seen on an oak trunk, and *Hydrocampa nymphæata* and *H. stagnata* were abundant among *Sparganium* at Holmsley. A motor ride to Swanage on August 5th, gave me two hours's grace, and, contenting myself with sandwiches while the others lunched at a hotel, I ran up to see how *Thymelicus acteon* was holding out, and, to my delight, found it was in marvellous numbers—much commoner than when I first saw it nine years ago. I netted a few picked specimens, and, on my way along the cliffs, walked up *Botys verticalis* commonly in a clover field, where *Melanargia galatea* also abounded in perfectly fresh condition. The best capture, however, was one fine *Polyommatus corydon* ab. *fowleri*.

A number of *Orneodes hexadactyla*, *Pyralis glaucinalis*, and other oddments at light, complete my meagre New Forest list, but as during the three weeks—with Macros, Plumes, Pyrales, and Crambi only—I had seen or taken 215 species, I cannot complain of lack of variety. For this result, however, I have very largely to thank Mr. Hodges, as without his elaborate directions I should possibly have missed several desirable species, or at any rate should have wasted much valuable time in finding them.

Reports of Entomological Societies and Entomological Records.

By Rev. C. R. N. BURROWS.

I am engaged in compiling an "Index Entomologicus" for my own use—condensing into one ponderous volume records from the various entomological works which come within my reach—localities, dates of capture, aberrations, etc., etc. Should I live long enough, the work might become of value, could it find a publisher, but the clerical labour is tedious, monotonous, and *sad*. It is this *sadness* which prompts me to write these lines. I find in floundering through the ancient pages (for I have scarcely got within twenty years of the

present date), a most lamentable lack of definite information, which effectually prevents many records being either of use or interest; and unless records are of use or interest, they surely cease to be records at all. To make a long story short I will try to show what I am driving at, by illustrating from the magazines published since the year 1890 what I mean. I take one of these volumes haphazard—I open it at the first page of its Societies' Reports:

"Mr. ——— exhibited for Mr. ——— of ———, and read notes on *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. ——— this year."

"Mr. ——— exhibited dark varieties of *Acronicta leporina*, bred by Mr. ———, also a white variety of *Triphaena pronuba*, taken at ———, by Mr. ———."

"Mr. ——— exhibited a monstrosity of *Abraxas grossulariata*."

"Mr. ——— exhibited a series of striking varieties of *Satyrus hyperanthus*, bred from ova laid by a female taken in the New Forest—"

and so on. These are not striking instances, for I have honestly quoted from the report of the first society which I dropped upon. One asks: What good do these records do? What were the peculiarities of the specimens exhibited? Where were they taken? When? How? Without details one only learns that Mr. ——— had bred *Arctia lubricipeda* var. *radiata*, that there is a dark (how dark?) aberration of *Acronicta leporina*, and a white ab. of *T. pronuba*. What was the nature of the monstrosity exhibited we are left to guess; and we learn that Mr. ——— has bred *Satyrus hyperanthus*, and that this species occurs in the New Forest and is liable to variation. In these cases it is not fair to blame either the secretaries, who can only forward such information as they receive, or the magazines, who, pledged to publish, must publish, what they receive.

To pass on to paragraphs as to captures. Here is one:—

"Gnophria rubricollis in June.—A friend took this insect in June last in Somersetshire. Is not this early in the season? I have never myself taken this moth, but relatives used to take it in Gloucestershire in August. I see Newman gives August as the time of its appearance."

Now here was an opportunity of making two points—*localities*, which would be interesting, and *dates*, perhaps more so. Unfortunately both June and August comprise four weeks, a long period in our brief summer, with only an equal period between, and the record is of no use to me. And so on. A correspondent has had a month's collecting, he naturally does not always collect in one spot. The record may run: "Last July"—or oftener "from the middle of July to the middle of August—I spent at———" I took "so and so." Here would be a consolation, if one always felt sure that the insects recorded came from one locality. But, alas, I have recently read some collectors' notes who evidently travelled about, yet do not say where, when, or how their captures were made.

I say we must not blame the secretaries, or the editors, but ourselves. Every record, every note, ought surely to carry some information with it, as I should put it something which would allow it to be placed in my "Index." It is wonderfully interesting to hear or read that a brother entomologist has taken *Pieris brassicae*, *Manduca atropos*, *Laphygma exigua*, or even *Thalpochares paula*, but it is not of lasting interest unless we know either *when*, *where*, *how*, or at least something more about it. In notes recording the rearing of species, surely it would be of interest to notice the oval period, the

appearance of the young larva, the length and number of the stadia, pupal period, time of its emergence from pupa, length of time taken in drying its wings. Newman's was a wonderful book, but no one can study it without discerning how little he knew of the insects he wrote about.

May I urge upon all entomologists that virtue without which science is but a delusion—exactness. If we make records, let us try to be as precise as we can; if we exhibit, give the secretaries a chance by supplying them with particulars which contain something of permanent interest and value.

Nemoria viridata, L., ab. mathewi, n. ab.

By EUSTACE R. BANKES, M.A., F.E.S.

This aberration differs from all the named forms of this species in that both fore- and hindwings are dusted with orange scales. These are fewest towards the bases, but become increasingly numerous posteriorly, and are especially noticeable between the subterminal line and the termen of the forewing, and on the corresponding portion of the hindwing.

In the five examples examined, the thorax also differs from that of the ordinary forms, being of a dingy greenish-buff, and the actual ground colour of the wings is rather paler and somewhat tinged with dingy buff. It seems probable that the orange dusting, upon which alone I rely as the characteristic of ab. *mathewi*, might occur in either the typical form, or in any one of the named varieties that only differ from the single-lined type in the number or distinctness of the transverse white lines, but I have only seen it in var. *cloraria*, Hb., which is the commonest form in Britain.

A few individuals of this singular aberration, which occurs in both sexes, were bred, amongst a goodly series of ordinary forms, in June, 1905, by Paymaster-in-Chief Gervase F. Mathew, R.N., after whom I have much pleasure in naming it, from ova laid by a female captured in South Devon. The larvæ were reared on hawthorn, of which they showed a preference for the most succulent shoots, and fed up very slowly. I have little doubt that at first sight anyone would suppose that the peculiar sickly appearance of ab. *mathewi* was due to discoloration, but an examination, under a lens, of the orange scales precludes any such idea, and Mr. Mathew, whose accuracy of observation is well-known, informs me that the specimens, when freshly emerged, were of the present colour, or, if anything, a trifle brighter. They were killed, as were all the rest of the beautiful brood to which they belonged, by an injection of oxalic acid following on stupefaction by chloroform. The ordinary forms of *viridata* begin to fade, as they invariably do in the cabinet, at the bases of the wings, but in ab. *mathewi* the departure from the normal coloration is far more noticeable near the termen, and much less so at the base, than elsewhere.

Notes on Collecting Lepidoptera in Egypt in May and June.

By PHILIP P. GRAVES.

Save for a day in the Wadi Hof, near Helwan, in mid-March, when two or three *Anthocharis belia* were taken, I was unable to do

any collecting this year till the last week in April, when I visited the Wadi Rished to look for the blue which I call *Plebeius allardii*, Obth., but which, judging by specimens of that insect in the British Museum collection, is intermediate between that species and *loewii*. On arriving at the Wadi I found a terrific wind blowing, and could do nothing. I noted one *A. belia*, a few *Lampides boeticus*, and many *Pyrameis cardui*. During the last few days of the month and early in May *Catochrysops theophrastus* abounded in the Ezbeniah Gardens at Cairo, and large numbers were obtainable from grass stems after 4.30 p.m. A visit to Ezbet el Nakhla produced nothing but a few *Polyommatus lysimon*, the ground having been ruined by the operations of a building society. On May 7th, I again tried Wadi Rished, and found hundreds of *Pyrameis cardui* and *Heliothis armigera* (tomato-feeding species) everywhere. Of the much-needed *Plebeius allardii* I only got two males, seeing a female which escaped. I also, to my great surprise, saw one *Colias edusa* male, and took two *Pieris rapae*, small specimens with very white undersides, which I had never before seen in the desert. Crucifers were exceptionally abundant in the Wadi, which may explain the occurrence there of a field and garden species. I took several *Pontia glauconome*—rather worn—one *P. daplidice*—my third in Egypt, also the worse for wear—and several worn *Polyommatus lysimon* and fresh *Lampides boeticus*, with a female *Langia telicanus* ovipositing on *Alhagi manniferum*, and a fresh *Sterrha sacraria*. To return to Cairo, *Catochrysops theophrastus*, rarer at the end of the month, grew very common again in June, when *Langia telicanus* appeared in a fresh brood, the first specimens being taken by me on the 20th. I obtained numerous larvæ of *Hypolycaena livia* on fitneh, but have thus far only obtained one male and three females from pupæ. Pending a full description of the ova and larval stages of this interesting insect I may make the following observations :

1. The ova are deposited on occupied and unoccupied pods by the female butterfly. On a pod which contained a three-parts-grown larva I found eight ova.

2. More than one larva may be found in a single pod. I took two large larvæ in the penultimate instar in one pod on June 15th. I surmise that if two larvæ meet one devours the other : three cases of cannibalism—one of a pupa freshly-formed and two of larvæ—have come to my notice while rearing the larvæ.

3. The insect, like the Indian *Virachola isocrates*, will devour pomegranate fruit, and is reported by Mr. Willcocks to do much damage to the pomegranate orchards in Upper Egypt.

On June 26th, I noticed two or three very small *Lampides boeticus* g. a. *aestiva*, Zeller, on grass stems in the Ezbekiah Gardens, but had, unluckily, no means of catching them. On the same afternoon *Polyommatus lysimon*, *Catochrysops theophrastus and Langia telicanus* were greatly in evidence, the first two roosting on grass stems, the latter on bushes. Finally, I may note that the local press recorded a " plague of butterflies of all sizes and colours " as troubling Suez in the first half of May. Enquiries showed that only one species, *Pyrameis cardui*, was at all common there, but that, in revenge, this species occurred by the thousand in the town, the desert, and the small cultivated area near the port.

NOTES ON COLLECTING, Etc.

Lepidoptera in Cumberland.—This season up to now has been one of the *wettest* known. Insects have consequently been very backward.

I collected a number of mines of *Nepticula aurella* from bramble, and pupæ of *Lithocolletis faginella* from beech, and bred a nice lot of both species by gently forcing them. *N. aurella* invariably emerged in 17 to 21 days, whilst *L. faginella* was always over 28 days in appearing. I noticed in March a few cases of *Coleophora gryphipennella* on rose; this insect is apparently much scarcer here than at Carlisle. *Hybernia marginaria* was common on March 28th. During April I took one *Asphalia flavicornis* (April 1st), and one *Anisopteryx aescularia*, also on the 1st. On the 21st I heard of one *Amphidasys strataria* being taken from the sallow bloom at Carlisle during the daytime, and *Brephos parthenias* was also common flying over the birches. Twelve *Xylocampa areola* were taken this day by a Carlisle collector. Larvæ of *Arctia caja* appeared on the 28th, and on the 29th I saw *Pieris napi* for the first time, and, at night, by searching, I took two larvæ of *Boarmia repandata* and one of *Noctua xanthographa*, two of *N. baja*, and one *N. festiva*. A journey to Scale Hill on May 5th produced one very dark smoky form of *Tephrosia crepuscularia* (*biundularia*) and one *Lobophora viretata*. Along the roadsides I took several larvæ of *Arctia caja*, and saw a good many *Pieris napi* flying. I noticed a ♀ on a flower, and presently up came a ♂, and after circling around about twice about two feet above her he descended and immediately copulated with her. The ♀ had been excitedly waving her body up and down by first curving it up above her back and then throwing it out straight again. I disturbed them, and the ♀ flew away with the ♂ attached, and although I several times made them fly, not once did the ♂ make any attempt to use its wings, but remained quite passive with its wings raised above it, the same as when at rest at night. On the moor at Mockerkin I took a cocoon of *Phragmatobia fuliginosa*. The hills on every side were snow-capped on this date. Larvæ of *Arctia caja* were common wherever one visited now, and, on May 15th, *Melanippe fluctuata* and *Elachista rufocinerea* appeared. I discovered a few cases of *Coleophora discordella* on *Lotus corniculatus* on the 16th, and saw cases of *C. alcyonipennella* on *Centaurea nigra* and *C. nigricella* in profusion, and also a few larvæ of *Tortrix palleana* on *Plantago lanceolata*. A visit to Carlisle to look up larvæ of *Melitaea aurinia* was successful. Although it has been exterminated at its old locality, it is still to be taken in fair numbers in several places within a few miles of Carlisle. I took five larvæ of *Nemeophila russula*, and saw *Cosmotriche potatoria* larvæ in profusion. I have only taken two of this latter near Workington. I also took, at Carlisle, two *Pararge megaera* and two *Melanippe fluctuata*, one *Acronycta menyanthidis*, one *Nola confusalis*, and one *Anticlea nigrofasciaria*, besides five larvæ of *Lasiocampa quercûs*, and noticed several Micros—*Adela viridella*, *Nomophora swammerdammella*, *Elachista cygnipennella*, *Amphysa prodromana*, &c. On the 22nd I took one *Cucullia chamomillae* sitting on some railway sleepers at Workington. On the 25th, I saw *Pieris napi*, a nice dark ♂, also *Eupithecia venosata* (six), and *E. vulgata* (one). At Flimby, on the 26th, I got three *Nola confusalis* and two *Euchloë cardamines* ♂s, and saw plenty of *Pieris rapae*, *P. napi*, and a few *P. brassicae*, and, on the moor near Broughton, I took a nice *Nisoniades tages*, and saw several *Incurvaria masculella* and *Lithocolletis pomifoliella* amongst hawthorn. I also got one *Dianthoecia conspersa* and one *D. carpophaga* at rest on railway sleepers.

On the 27th *Eupithecia venosata* was very common, and, rather remarkable, a fine *Larentia salicata* was taken on the shore at dusk. I found ova of *E. venosata* on the unopened flowers of *Silene maritima* on May 29th. They were laid singly on the side of the flowers, and, when the eggs hatched, the young larvæ bored into the flowers and fed upon the seeds inside which had developed. It rained almost incessantly for a fortnight, and no collecting could be done. On June 10th four nice *Melitaea aurinia* emerged, and one *Noctua festiva*, the latter from a Workington larva. June 17th produced two *Emmelesia decolorata*, one *Spilosoma lubricipeda*, and several *S. menthastri*. I sugared on the 27th, and moths were in fair numbers on the first five trees, but a sudden burst of rain came on, and I could only find where I had sugared by the moths sitting on the wet trees. I got some nice *Xylocampa rurea* and dark aberrations, *Hadena thalassina*, *H. adusta*, and *Grammesia trilinea*. A journey to Buttermere in search of larvæ of *Erebia epiphron* was very disappointing, and, although I spent the night upon the mountains I saw no signs of it, and I could not sweep as everything was so wet with a very heavy dew. Later I will send notes of my captures at Buttermere.—George Wilkinson, 241, Moss Bay Road, Workington. *July 15th*, 1907.

Notes on the "blue" butterflies of Cumberland.—We get two species of "blues" regularly in Cumberland—*Polyommatus icarus* and *Cupido minima* (*alsus*). The former is very generally distributed. At Wreay, about four miles from Carlisle, a large bright form of the male is common on the railway banks, and some interesting undersides are to be taken. The specimens from the seaside seem to be much duller and smaller, and the females vary much more than inland ones. It is fairly common around the hills, but I have not noticed it at any elevation at all out of the common. *Cupido minima* (*alsus*) is locally common, and in one small dip in the railway bank near Wreay it is abundant. The examples from Gelt and Newbiggin Woods are very much more blue than the Wreay ones, especially the males. They vary considerably in the undersides, some being spotless, others much streaked and spotted. *Celastrina argiolus* occurs here, but is spasmodic and uncertain in its appearance.—Ibid.

Trochilium andrenæformis, etc., in Kent.—You will be pleased to hear that I have just bred a beautiful specimen of this species from a larva found in this neighbourhood. It may also be worth noting that, on the 17th, Mr. Crocker and myself found *Odontia dentalis* and a good many *Toxocampa pastinum* in the Halling district.—J. Ovenden, Strood, Kent. *July 19th*, 1907.

Notes on Nordmannia acaciæ and Edwardsia w-album in the Basses-Alpes.—(1) Nordmannia acaciæ.—*Habitats:* The path by the Verdon, on the way from Allos to the Lac d'Allos, where blackthorn bushes grow on either side of the path, and edge the fields above and below; the top of the gorge itself, where also stunted blackthorn bushes edge the fields that terminate at the shaly sloping banks that fall down to the river, as also the rough rocky slopes higher up towards the Bois de Vacherie, where stunted blackthorns are found with the juniper bushes here and there, where the ground is less rocky, are all spots where *N. acaciae* is to be found. It also occurs at the edge of the pine-wood that terminates the steep rocky slopes before entering Allos from Colmars. At Clelles-Mens, it is at

home on the stunted sloe-bushes by the side of a field, where tall grass and wild flowers are half as high as the bushes, with a steep stony torrent-bed on the other side, not far from the station, but on the opposite side of the railway from the Hotel Ferrat. *Habits:* At Clelles-Mens, the specimens were going over by the last days of July and the first days of August, 1906, flitting, however, strongly about the sloe-bushes, resting on the leaves, and apparently neglecting flowers; their habit of running over the leaves and terminal shoots, led one to hope for eggs, which, however, were not discovered. At Allos, where the species appeared to be widely distributed, although going over during the second week of August, its habits proved to be very interesting. The imagines flew rapidly from one side of the road to the other with a quick darting flight, rested on the blackthorn leaves, or settled towards midday and in the afternoon on many species of flowers, of which yarrow, lavender, scabious, and a large yellow composite plant were the most frequently chosen. Here they sucked the honey towards noon, in the sun, rather restlessly moving their hindwings alternately to and fro, or giving chase to a *Polyommatus damon* that disturbed them, whilst, in the later afternoon, they rested quietly in the shade on the flowers, and sometimes even did not object to be picked off a flower with the fingers. A female, noticed in the bright sun, on the morning of August 12th, set itself across a leaf of blackthorn and carefully inspected the leaf and then the stem near the base of the petiole, doing the same to two or three other leaves before flying away, but nothing appeared to result from the examination. (2) Edwardsia w-album.—By the side of the path near Allos described above, a few elm-trees grew, which were fearfully attacked by some aphid-looking gall-making insects, and these elms were undoubtedly the local home of this species, two or three exceedingly worn examples of which were picked up on the morning of August 11th, 1906, resting on flowers in their immediate vicinity.—J. W. Tutt, 119, Westcombe Hill, S.E.

Lepidoptera of 1906.—I am very late in sending you an account of our success here last year, but, at the same time, it was such a record year with us at Paignton that it may be of interest to record what occurred. On May 31st, 1906, I went to watch *Silene* flowers for *Dianthoeciae*. On arriving at the place, while still quite light, I saw some hawk moths whizzing about, especially over a patch of pink flowers, and I succeeded in capturing two of them. These turned out to be *Phryxus livornica*. The same night I also took a specimen of *Heliothis peltigera*. Both moths are first records for the Paignton district, at all events, as far as any of us now working here are concerned. Between May 31st and June 9th, my son took two more *Phryxus livornica*, and a friend captured one. I am pleased to say I have these five moths in my cabinet. *Heliothis peltigera* came to sugar in the autumn, and also *Laphygma exigua*, so we had a record year. You may be sure I was on the lookout this year, but neither *P. livornica* nor *H. peltigera* put in an appearance. I may add that I never remember Geometrids so scarce or backward as this season of 1907.—W. R. Goodale, Oaklands, Paignton. *July 22nd*, 1907.

Abundance of insects at light.—With the change in the weather that occurred about July 10th, the abundance of insects in the south-east London suburban districts at light was quite phenomenal. Many

species whose emergence appears to have been delayed by the cold winds, appeared to come out with a burst, and one saw specimens of *Spilosoma lubricipeda* at light, with numbers of *Urapteryx sambucaria*, as well as many *Mimas tiliae*, *Amorpha populi*, and *Dicranura vinula*. Common Noctuids were particularly abundant—*Xylophasia polyodon*, *Noctua plecta*, and *Agrotis exclamationis* being particularly plentiful in the main streets, both of Lewisham and Greenwich. But the night of July 20th was the most remarkable. On this evening there were absolutely millions of moths on the windows, and round the electric lights, in East Greenwich, the bulk of the specimens consisting of the common *Crambus culmellus*, which must have been attracted from the waste ground of what still exists of Greenwich Marshes. But the common garden Tortricids and Pyralids—of which the beautiful *Hypsopygia* (*Pyralis*) *costalis* was particularly conspicuous—were also in numbers, and *Cossus cossus* and *Zeuzera pyrina* were also noted. There appeared to be little worth catching, but this was probably rather from difficulty of observation in a crowded street than from absence of many things one might have taken.—J. W. Tutt, 119, Westcombe Hill, Blackheath, S.E. *July 24th*, 1907.

Habits of Cidaria populata.—The morning of August 15th, 1907, was cloudy in the Upper Engadine, a walk through the pine wood between St. Moritz and Pontresina showed little enough entomologically. The feature, however, was the abundance of *Cidaria populata* which was in great abundance. One supposes there must have been many thousands in the wood, apparently almost all at rest on the underside of the bilberry leaves, both sexes almost equally abundant. I was much interested to notice that the males in particular held up the tips of their abdomina, cuving them upwards and forwards almost exactly in the manner of *Pyralis farinalis*. That the habit is of value to them was proved by my observing an ant, evidently hunting a plant pretty closely, on which a male was resting. The ant at last reached the leaf beneath which the *C. populata* was, and, advancing quickly over the edge, made a dash for the body. Had the point of the abdomen been in the same plane as the thorax and front part of the abdomen, the ant would assuredly have grabbed it; as it was, it bustled into a higher point of the abdomen, disturbed the moth, which quickly moved to the top of the leaf, ran quickly along a branch, and prepared to fly off. Many odd examples of the moth were observed on the wing, and one suspects that these may have been similarly disturbed.—Ibid.

Habits of Fidonia brunneata.—At the same time the males of *Fidonia brunneata* were flying freely in the wood at a height of from five to seven feet from the ground, but not a single female was observed either on the wing or resting. Similarly, on the morning of July 31st, at Goeschenen, the males were flying commonly. We remember one afternoon in early August, 1903, the males flying freely, and also very many settling on the mule-droppings in the road nearly to Arolla, and picked up one or two females resting by the roadside. When is the active period of the female? Is she quiescent while the male is active, although ready to pair, and is she active egglaying at night, when he is presumably at rest? Has anyone notes on the habits of the species? —Ibid.

Issoria lathonia attacked by an ant.—It is a common experience

in the Alps to find insects in the very finest condition captured by, and in possession of, an ant. Such was my experience on the afternoon of August 13th, high up on the moraine of the Morteratsch glacier, when a fine male *Melampias epiphron* was observed gently moving forward with outspread wings on the road, and, already dead, was taken from the clutches of an ant. The next morning, in the Roseg Valley, a rather small example of *Issoria lathonia* was observed flying rather near the ground. It flew as quickly as is usual with the species, and dodged with equal facility, but kept low down among the herbage. Netting it, I was surprised to find clinging to its left hind-leg an ant, which I killed as well as the butterfly, without it yielding at all in the tenacity of its grip. I set the *lathonia*, with the ant still attached to its leg. I have no doubt that this example would, in the usual course of events, have succumbed to the ant, and that when it had settled again the ant would have obtained a higher and equally secure grip, whence it could have attacked the body.—Ibid.

Unusual red-currant feeders.—During the last few years, I have fed my larvæ of *Abraxas grossulariata* on red-currant, whenever obtainable. A few autumns ago I discovered, on a leaf of a cut red-currant stem, a batch of large lepidopterous eggs, which turned out to be those of *Arctia caia*. The resulting larvæ fed up well on this unrecorded pabulum and produced fine moths. This spring I similarly discovered a batch of Geometrid ova, which proved to be those of *Crocallis elinguaria*. The larvæ (which are now in the pupal state) grew and throve amazingly, and having plenty of food, never displayed any cannibalistic tendencies.—(Rev.) G. H. Raynor, Hazeleigh Rectory, Maldon. *August 27th*, 1907.

Note on the foodplant of Gonepteryx rhamni.—When I came here eleven years ago, I was anxious to obtain and place in my garden various shrubs and plants frequented by the larvæ of British butterflies. I could not hear of any nurserymen able to supply *Rhamnus catharticus* and *R. frangula*. So I had to be content with a couple of bushes of *R. hybridus*, which I obtained at the modest outlay of 6d. each. This species is supposed to be a hybrid between *R. alaternus* and *R. alpinus*: it is sterile, and has leaves which persist till the second winter. These two bushes flourished exceedingly, and, of late years, I have pruned them hard back every spring, with the result that they have produced most luxuriant foliage. On several occasions I have noticed the latter to be much eaten, and once found larvæ of *Scotosia dubitata* feeding on it. This year, the larvæ of *Gonepteryx rhamni* were more than usually abundant on *R. frangula*, and this fact induced me to examine my *R. hybridus* bushes more carefully, the result being that, on June 28th, I found a large number of *G. rhamni* larvæ of all sizes feeding upon them. These larvæ, as well as those I collected this year from wild bushes of *R. frangula*, were unusually free from parasites, and almost every one produced an imago.—Ibid.

Larentia cæsiata on Exmoor.—On June 29th, my brother and I noticed a number of moths flying on a moor in North Somersetshire, about 10 miles from here (Lynmouth), but, as we had not any nets, we only managed to secure one, which turned out to be a well-marked example of this species. We went again with nets on July 18th, but they were all past, and we did not see a single one. I think this is the most southern recorded British locality for this insect.—T. H.

Briggs, F.E.S., Rock House, Lynmouth, R.S.O., North Devon. *August 28th*, 1907. [Record for Yes Tor, Dartmoor (Benbow, *Ent.*, 1878, p. 21).—C.R.N.B.]

CURRENT NOTES.

Mr. W. J. Kaye, who intended sailing to Trinidad on August 21st on an entomological tour, has, unfortunately, had to postpone his visit owing to the prevalence of yellow fever there.

Having completed our lifehistories in detail of all the British "hairstreaks" in *A Natural History of British Butterflies*, vol. ii., parts 1-12, we shall be exceedingly glad for any careful observations and notes on the "variation," "egglaying," "larval habits," "imaginal habits," "habitats," "exact dates of appearance," and "localities" from entomologists at home and abroad, relating to any species of our British "blue" butterflies. We particularly want accounts of the gynandromorphs known to be in various collections.

It is with the greatest regret that we learn of the death, on July 11th, of our valued correspondent, Mr. J. Harrison, of Barnsley, at the age of 73. His careful and reliable observations were always of the greatest value to all those who sought his aid, and we ourselves have often been greatly indebted to him both for information and specimens of local forms of Yorkshire lepidoptera. He was one of the five original members of the Barnsley Naturalists' Society, established in 1867, and now one of the most successful of the Societies affiliated to the Yorkshire Union.

Mr. E. R. Bankes (*Ent. Mo. Mag.*) shows cause for considering *Epiblema costipunctana*, Haw., to be an aberrative form of the well-known *E. trigeminana*, Stphs.

British lepidopterists are fortunate in having two accounts of the lifehistory of *Chrysophanus* var. *rutilus* at disposal in less than twelve months. The first account, published about a year since, gave a detailed structural account of the insect in all its stages, by Dr. Chapman and Mr. Sich, and appeared last year in *A Natural History of British Butterfiies*, i., pp. 417-461, the second, less complete in structural detail, is now being published by Mr. Frohawk. The latter, however, was extremely fortunate in breeding a splendid gynandromorph, figured in *The Entomologist*, p. 178. Right side ♂, left side ♀.

In the *Irish Naturalist* (August), the Rev. W. F. Johnson has some interesting "Notes on Irish Hymenoptera."

Our entomologists will find a most interesting paper in *Science*, n.s. vol. xxiv., pp. 621-628, 665-666, and 695-699, by Professor Vernon L. Kellogg, entitled "Is there determinate Variation? A note on assortative mating variation in Parthenogenetic Insects." The paper should not only be interesting to all students of variation, but particularly so to coleopterists, the species *Diabrotica soror* being particularly dealt with.

Mr. F. Lowe has done good service to Economic Entomology by his publication of a pamphlet entitled *The Parasitical Insect Scheme for Treatment of Insects Infesting Vegetation*. The good work done by economic entomologists has for long been much discounted by the patent humbug and absurd performances of quacks, and Mr. Lowe in his paper exposes some of the methods followed out, particularly in

Australia, by certain so-called economic entomologists, whom he charges with exploiting the governing powers, and in wasteful expenditure for purposes that, presumably entomological, are wholly personal. Mr. Lowe's own common-sense remarks on the subject show him to be a thoughtful and well-informed naturalist with an excellent grip of the principles that must underlie any successful application of human means to combat such insect pests as are injurious to cultivated crops. The booklet (55pp.) has, we understand, been widely distributed, and can be obtained from the author (6, Beacon-street, Boston, Mass., U.S.A.) Both for the critical portion, as well as the excellent first-hand information of practical methods, the pamphlet should be in the hands of all interested in Economic Entomology.

To those who are interested in the study of the "hairstreaks," some papers appearing in the current numbers of *The Canadian Entomologist*, by Mr. J. H. Cook, are worthy of attention. One wonders whether the genus *Incisalia*, the species of which are dealt with in these papers, is not wholly congeneric with our genus *Callophrys*.

Mr. Oliver records the capture of a specimen of *Hippotion celerio* on the North Cornish coast on June 20th, about 11.30 p.m., and adds that "it does not appear to be an immigrant, as its condition is perfect." We would ask why its perfect condition should prevent a specimen of this species from being an immigrant. This species and *Phryxus livornica* fly far and long without much injury (if any) to their wings.

Our orthopterists will be interested in a critical appreciation of Kirby's excellent *Catalogue of Orthoptera*, vol. ii., by Mr. A. N. Caudell (*Can. Ent.*). His suggestions *re* the use of some of the generic names should receive careful attention.

Three more important Memoirs are issued by the Department of Agriculture in India. One is entitled "The More Important Insects Injurious to Indian Agriculture," by H. Maxwell-Lefroy; another, "Individual and Seasonal Variations in *Helopeltis theivora*, Whse., with Description of a New Species of *Helopeltis*," by Harold H. Mann; the third, "The Indian Surface Caterpillars of the genus *Agrotis*," is also by H. Maxwell-Lefroy.

We regret to learn that the Rev. G. H. Raynor has decided to dispose of his collection of British lepidoptera, with the exception of the butterflies, in which he intends to specialise. For the last eight years Mr. Raynor has devoted the greater part of his leisure to rearing *Agrotis grossulariata*, and we may safely assert that such a series of this species has never come under the hammer before. Our advertising columns contain a specific announcement of this important sale.

The complete clearance of the stock of *Practical Hints for the Field Lepidopterist*, Part I, leads to the consideration as to whether a second edition of this part should not be published during the winter months, ready for next year. In view of this possibility, we should be greatly obliged to every lepidopterist who will point out any slips or errors occurring in this part. It is, of course, advisable to retain the original paging, because Part I is indexed with Parts II and III at the end of Part III, but it appears to be advisable to extend the part somewhat. This can be done by separate paging in Roman numerals. We should be glad of suggestions as to what general subjects, not

touched on in the three parts, could be best added to improve and give a greater completion to the whole work.

Mr. E. R. Bankes describes a form of *Glyphipteryx thrasonella*, with "the terminal portion of the forewing more or less completely occupied by a large, brightly metallic, iridescent blotch," as ab. *nitens*.

Mr. C. F. Saunders captured a specimen of the rare British species, *Trochilium vespiformis*, in his garden at Woking on July 28th this year.

Lord Walsingham and Mr. Bankes are agreed that the specimen supposed to be an unique example of *Meessia vinculella* is merely a specimen of the allied *M. richardsoni*, which varies somewhat in its facies in its Dorset locality.

Dr. Franz Werner gives a list of the Dermaptera and Orthoptera of Bosnia and Hercegovina in the *Wiss. Mitth. aus Bosnien und der Hercegovina*, Band x., 1907. The list is based on material collected by the author in 1897 and 1903, together with specimens in the Brunner collection and in the Landesmuseum in Serajevo, together with published accounts. The list of the latter is very meagre, being confined to the author's own paper in 1897, Redtenbacher's little book on the "Orthoptera of Austria-Hungary," and Burr's "descriptions of three new *Platycleis*" from Hercegovina, published in this journal, vol. xi., 1899, but the author appears to be ignorant of Burr's short paper "On Orthoptera collected in S.E. Europe," published in this journal, vol. x., 1898, in which a number of localities are mentioned, and including the following species omitted by Dr. Werner; *Aphlebia maculata*, Schreb. (Bosnia); *Stauroderus biguttulus*, L. (Bosnia); *Isophya obtusa*, Br. (Bosnia); *Olynthoscelis transsylvanicus*, Fisch. (Bosnia, Hercegovina); *O. fallax*, Fisch. (Hercegovina); *Decticus albifrons*, Fabr. (Hercegovina); *Nemobius lineolatus*, Brullé (Bosnia). It is probably quite accidental that Dr. Werner has omitted *Decticus albifrons*, which is a striking and a common insect near Mostar. Dr. Werner describes two new earwigs, *Chelidoura apfelbecki*, allied to *P. orsinii*, and *C. reiseri*, resembling *P. edentula*, and also a new *Platycleis*, *P. hormanni*, allied to *P. roeselii* and *P. modesta*. The list is a valuable contribution to our knowledge of the orthoptera of these two provinces, so alike politically, yet so distinct geographically and faunistically.

SOCIETIES.

South London Entomological Society.—*July* 11*th*, 1907.—Exhibits.—Agriades bellargus, Polyommatus icarus.—Fine-bred specimens by Mr. Rayward, who commented upon their size and brilliancy in spite of the fact that ants were almost constantly in attendance upon the larvæ. Euchelia jacobææ.—From Dunkirk sand-dunes, one of which was exceedingly pale—Mr. H. Moore. Cedestis farinatella cocoons.—A lepidopteron, the larva of which lives in the needles of Scotch fir—Mr. Sich. Amorpha populi.—A gynandromorphous specimen. Melitæa aurinia.—Bred series from Kent and Ireland. Smerinthus ocellata, with extreme development of pink coloration of the forewings. Dicranura bicuspis.—Bred specimens from Tilgate. Polyommatus icarus.—A selection of undersides from North Kent. Dryas paphia and Argynnis adippe.—Fullgrown larvæ and pupæ. Agriades corydon.—Living larvæ. Cucullia graphalii.—Bred specimens. Boarmia repandata.—An extremely varied series from Leigh Woods, Torquay, Epsom, and North Kent, including extreme forms of var. conversaria and melanic forms—Mr. L. W. Newman. *July* 25*th*, 1907.—Exhibits.—Arctia villica, a bred series

from North Kent, including a number of asymmetrical forms, with aberrant markings—Mr. L. W. Newman. ANOBIUM PANACEUM, a coleopteron which has been found destructive to tobacco—Mr. R. Adkin. TORTRIX PRONUBANA, a specimen taken in his garden, at Chiswick—Mr. A. Sich. ABRAXAS SYLVATA, a short series, including some curiously clouded forms—Mr. South. ESYCORUS ÆNEUS, CORISCUS MACULATUS, and LOPUS GOTHICUS, rare species of Hemiptera from the New Forest—Mr. West. *August 8th*, 1907.—EXHIBITS.—MALACOSOMA CASTRENSIS × M. NEUSTRIA, hybrid—Mr. South, who read notes thereupon. TOXOCAMPA CRACCÆ, a bred specimen from North Cornwall—Mr. Montgomery. SATURNIA CARPINI, an unusually pink form. SMERINTHUS OCELLATA, a very dark form. ARCTIA CAJA, a dark bred specimen. ENNOMOS AUTUMNARIA, living larvæ from Dover—Mr. L. W. Newman. SIREX GIGAS, female, from Sutton—Mr. Goulton. CEMIOSTOMA LABURNELLA, egg-shells, mines, cocoon, and imago, from Chiswick—Mr. Sich.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*June 4th*, 1907.—EXHIBITS.—ENNOMOS QUERCINARIA, including ab. EQUESTRARIA, from near Ipswich—Rev. C. R. N. Burrows. E. QUERCINARIA, including abs. CARPINATA, INFUSCATA, and EQUESTRARIA. CROCALLIS ELINGUARIA, including Scotch specimens of a deep, almost orange, colour, and without the usual central fascia on forewings; and other "thorns"—Mr. J. A. Clark. GONODONTIS BIDENTATA.—Melanic forms, from Leeds district. ENNOMOS QUERCINARIA, from near Ipswich—Mr. A. W. Mera. ENNOMOS QUERCINARIA ab. INFUSCATA, from South Kensington—Mr. L. B. Prout. ENNOMOS QUERCINARIA, a long and very variable series, from South Kensington—Mr. J. Riches. NOLA CUCULLATELLA, pupæ, XYLOPHASIA SCOLOPACINA, larvæ, both from Bexley—Mr. V. Shaw. *June 18th*, 1907.—EXHIBITS.—ERANNIS LEUCOPHÆARIA.—Very dark specimens from the New Forest, with usual median band on the forewings, nearly obsolete—Mr. J. A. Clark. CALOCAMPA VETUSTA.—Larvæ from South Tyrol, which, instead of being green, as in the case of British specimens, were black, with yellow dorsal and lateral stripes, and pale whitish subdorsal line—Dr. T. A. Chapman. NYSSIA LAPPONARIA.—From Rannock, including a male with a pale yellow dorsal stripe, and costa. TAENIOCAMPA GOTHICA ab. GOTHICINA.—From the same district. T. INCERTA.—An unicolorous specimen, with only the reniform and orbicular stigmata faintly indicated—Mr. E. A. Cockayne. CHILO PHRAGMITELLUS.—A very dark, almost black, male, from the Norfolk Broads. LITHOSIA CANIOLA.—Larvæ nearly full-fed—Mr. H. M. Edelsten. NEMORIA VIRIDATA, from Surrey; one with reddish-brown forewings flecked with irregular green patches, and hindwings of the usual green colour, except at the anal angle; another, of the normal coloration, with wings dappled, with irregular and asymmetrical reddish patches—Dr. G. J. C. Hodgson. ERANNIS LEUCOPHÆARIA ab. FUSCATA, from Huddersfield, and ab. MARMORINARIA, from Richmond Park—Mr. Shepherd. SYNOPSIA ABRUPTARIA.—From Holloway, including many very dark examples, and an extraordinary gynandromorphous specimen, the right-hand wings being those of an almost black male, the left wings being those of a typical light female—Mr. C. W. Simmons. TÆNIOCAMPA OPIMA.—From Epping Forest district, including a specimen of the type of Hübner—Mr. A. W. Wilsden. MACROTHYLACIA RUBI.—Ova laid on wing of dead jay in Ashdown Forest—Mr. Grosvenor.

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Duplicates.—Sibylla, Sinapis, Tages, Alveolus, Semele, Alsus, Davus, Aglaia, Epiphron, Galatea, Blandina, Acteon, Arion (fair), Argiolus, Lucina, Statices, Geryon, Globulariæ, Chrysorrhœa*, Hera*, Fimbria, Lichenea, Neglecta, Moneta*, Geminipuncta*, Cespitis*, Lunosa, Miniosa, Carpophaga, Nigra, Miniosa, Croceago*, Petrificata (fair), Sulphuralis, Satyrata, Salicata, Advenaria, Apiciaria, Fasciaria*, Orbicularia*, Albicillata, Undulata, Procellata, Revayana, Literana, Piceana*, Colquhounana, Sylvestrana, Bifasciana, Pilleriana, Dalella. *Desiderata.*—Numerous.—*Percy M. Bright, Roccaburna, Bodagan Road, Bournemouth.*

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WANTED.—Good photographs or careful drawings of Aberrations, Gynandromorphs, etc., of any British "Hairstreaks" and "Blues," for reproduction in *The Natural History of the British Butterflies.* Also photos and good drawings of Aberrations and Gynandromorphs of other groups that may be used later as opportunity offers. [Specimens not necessarily British.]—*J. W. Tutt, 119, Westcombe Hill, Blackheath.*

EGGS WANTED.—For photographing for illustrating *The Natural History of British Butterflies*—Eggs of Iris. Will workers in Switzerland, Germany, or South France please oblige when opportunity occurs?—*A. E. Tonge, "Aincroft," Grammar School Hill, Reigate.*

LARVÆ AND PUPÆ WANTED.—For photography for illustrating *The Natural History of British Butterflies*—nearly fullgrown larvæ and pupæ of the "Blues"—Agestis, Ægon, Icarus, Minima, Semiargus, Arion, Argiolus.—*H. Main, "Almondale," Buckingham Road, South Woodford.*

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MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W., 8 p.m. Meetings—October 2nd, 16th, November 6th, 20th, December 4th, January 15th (Annual).

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m., except in July and August. (No dates received.)

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m. September 2nd, "Exhibition." Field Excursion:—September 28th, Chingford, Liverpool Street, 9.32 a.m. and 2.8 p.m.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m. Field Meetings: September 14th, Kew Gardens; October 5th, Fungus Foray.

North London Natural History Society, The Amherst Club, Amhurst Road, N. (No notices.)

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec., H. R. Sweeting, 6, The Elms, Dingle, Liverpool.

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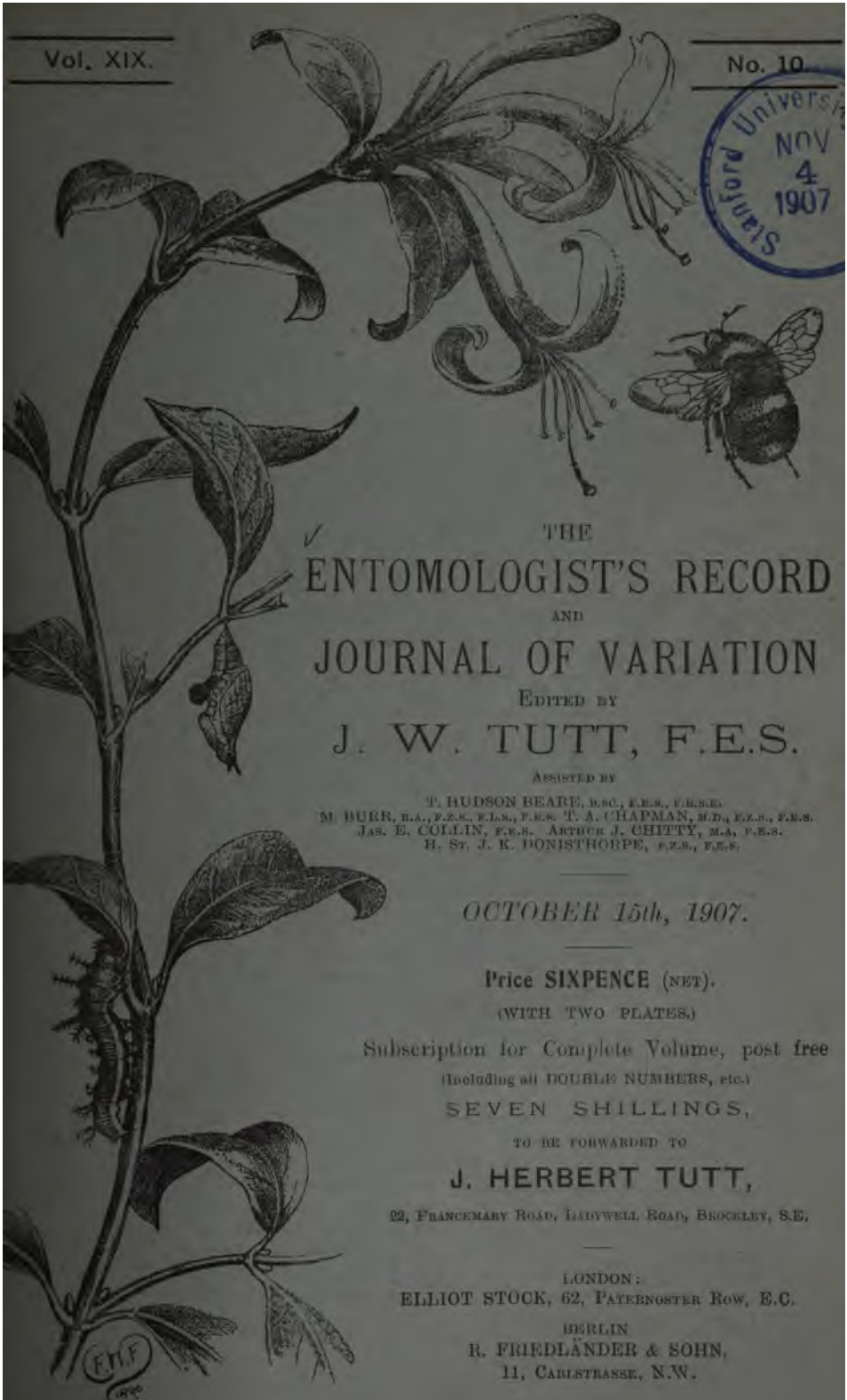
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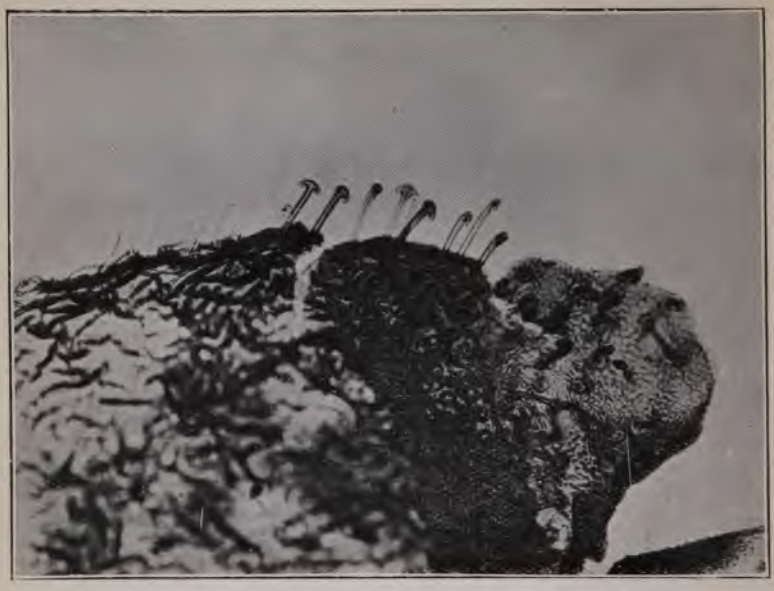
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1.



2. *Photo—F. N. Clark.*

Cremastral area of Ruralid pupæ.

Fig. 1.—*Strymon prumi*, portion of cremaster ×100.
Fig. 2.—*Callophrys rubi*, portion of cremastral area ×100.



Photo—F. N. Clark.

RURALIS BETULÆ—PORTION OF CREMASTRAL AREA OF PUPA ×100.

Notes on the cremaster of certain Ruralid pupæ (*with two plates*).

By Dr. T. A. CHAPMAN.

(1) Ruralis betulæ (Portion of the cremastral area × 100). Pl. viii., fig. 1.—In this and other similar preparations, there is an irregular fracture due to forcing the pupal skin to a flat surface, to enable it to be easily examined and to be photographed. In this case, less than half the area is broken away. The greater part of the photograph is of the dorsal portion of the 10th abdominal segment, with a pale (less chitinised) band, and a darker terminal portion, on both these the cremastral hooks (?), reduced to very short blunt hairs, are seen. The plate is not quite clear enough to demonstrate it, but it may be seen that they originate at the intersections of the fine ribbings of the skin sculpture. There is a large lenticle in the middle of the dark area, and one also in the pale area (to left of lower part of dark area). There are also two on the ventral area (to right). These are all repeated on the opposite side of the specimen, but are not symmetrical, *i.e.*, they are *near* the same place on the other side, so near as to appear to correspond, but are sufficiently distant to make it possible they do not. Down to the right, *i.e.*, above or dorsal to the pale band, fine skin-spiculæ come out well in the plate, as well as the ribbing of the skin-sculpture and the points they carry.

(2) Callophrys rubi (Portion of cremastral area × 100). Pl. vii., fig. 2.—We have, here, both sides of a fracture running through a portion of the cremastral region. This photograph, and the plate reproduces it fairly satisfactorily, illustrates at least three very remarkable points, that give this structure so much interest in the pupa of *Callophrys rubi*. In the first place, no one has noted that this pupa ever takes any attachment by its cremaster, I have never seen any indication of anything of the sort, and I have handled a good many pupæ of the species, yet the pupa possesses a good many very well-developed anchor-hooks of the pattern usual in the Theclid group, and, one would say, obviously quite capable of functional use. The two other points, however, afford support to the view that the cremaster is not used, and has reverted to more simple conditions, except, most extraordinarily, in the structure of the hooks themselves. The first of these items is that the hooks are, more plainly than in any other species I have examined, developments from the points that exist at the crossing of the skin reticulations, and have, therefore, no direct relationship with the ordinary hairs; with *C. rubi* before us to suggest the enquiry, one may note a similar condition in other species, but not pointedly enough to call attention to the structural fact. The other item is equally an illustration that the cremastral area is reverting to ordinary skin conditions; this is the occurrence amongst the anchor-hooks of the cremaster, of ordinary hairs, as usual, unattached to the reticular ribs. I do not know any pupa that has ordinary hairs mixed with the hooks of a functional cremaster, however closely they may approach it. It is to be observed, that the hairs are so much longer than the hooks that they would probably much embarrass, if not prevent, their proper functions, if its exercise was desired.

(3) Strymon pruni (Portion of the cremastral area × 100). Pl. vii., fig. 1.—Like the others figured a fractured portion, which fails

October 15th, 1907.

to show much in the plate over the central part of the photograph owing to the density of colour or chitin in this species, but atones by showing very well, certain of the hooks which project beyond the fractured edge. It also shows that, on the more dorsal portion of the 10th abdominal segment, the skin sculpture is not the neat network of some other Theclids, but rather an irregular wrinkling. Some of the ordinary hairs are seen at the fractured margin of this portion.

The Lepidoptera of the Basses-Alpes—Digne.

By J. W. TUTT, F.E.S.

On the morning of August 18th, 1906, I left the delightful country of Allos on my return journey. It was a lovely day, and, on the drive down, there were many interesting things to see, and, at Colmars, the fortifications, the old narrow streets and the church, all claimed attention whilst a stoppage was made. At Beauvézer I had expected that if Mr. Powell were really coming, I should hear news, and so I did, *viz.*, that he had passed through Beauvézer that morning, and that I had missed him somewhere in Colmars. However, it was too late for anything but regrets, and, that afternoon, I was back in Digne. The next morning broke almost cloudless, and I was early on the move. I went off up the Eaux-Chaudes Valley and explored the little glen that had produced such excellent results a fortnight earlier. Some changes had taken place. *Hipparchia statilinus* was more abundant, but beyond its best; *H. fidia* was not up to the standard of setting; *Hipparchia arethusa* was in great abundance everywhere, literally thousands, but now largely females; *Pararge maera*, with particularly bright females, reminding one of those at Susa; large but not very specially marked *Epinephele ianira* were abundant. *Colias edusa* hurtled along with *Pontia daplidice* by the roadsides, but *C. hyale* was less abundant, and worn. Many *Hipparchia hermione* were still in passable condition, and so were a few *H. circe*, but only one large female *Enodia dryas* was taken, on the last grass before crossing the bed of the stream. From the Baths onward, grand *Erebia neoridas* shared with *Hipparchia arethusa* the front position in the lepidopterous picture; this species was in hundreds everywhere, no longer chiefly males, but females of variable spotting, and showing marked differences in the width and intensity of the colour of the band. *Brenthis dia*, a rather small second brood, was abundant in the weedy field previously noted, and so was *Agriades bellargus*, but, strangely, only three females were seen, although worked for. *A. corydon* was equally abundant, but *A. hylas* was, with *A. meleager*, going over. Here then, *A. corydon* and *A. bellargus* were on the same ground, fighting at the same flowers, whilst *C. phlaeas* was occasionally seeen sunning on leaves, in the same place. Working over to the glen, one found on the *Eupatorium* flowers the lovely *Anthrocera fausta*, *Lithosia caniola*, that sneaked off and fell down to the ground as soon as notice was taken of it, *Loweia dorilis*, *Coenonympha pamphilus* and still some shadows of *C. dorus*. Here were also *Brenthis dia*, *Melitaea cinxia*, *M. phoebe*, and a small, bright race of *M. didyma* occurred, but none really common, whilst *Melitaea deione* was getting towards the end of its time. *Everes argiades*, rather small, *Plebeius argus*, also small, and almost pigmy *Polyommatus icarus*, the latter

very common, whilst fine large *Urbicola comma* hustled everywhere. Over the willows a few bright males of *Celastrina argiolus* flew almost unceasingly, whilst the darting *Ruralis betulae* either took flight from a willow leaf as one approached or sat less suspecting on the *Eupatorium* blossom. Here and there a second-brood example of *Leptidia duponcheli*, with more frequent *L. sinapis*, was to be observed. Up towards the poplars, where the spring rises, was quite a number of *Limenitis camilla*, two or three couples being disturbed, the males particularly small, and, if I remember rightly, these pigmies always carried the females when *in cop.* Only a few odd *Scolitantides baton* were observed, and a solitary *Rumicia phlaeas*. Two quite different forms of *Hesperia alveus* worry one—one large, strongly marked with clear white, and the undersides of some of these as bright red as in *Powellia sao*, the others smaller, greyer, with smaller dots, and rather of the usual form. An occasional worn *Nisoniades tages* suggested that the partial second-brood was over. *Polygonia c-album* still haunted the *Eupatorium* blossom, and *Pyrameis cardui*, of the most lovely colour, was frequent. *Hipparchia actaea*, like *Coenonympha dorus*, was over, although shadows of the former were in plenty. In the weedy field *Heliothis dipsaceus*, *Pyrausta purpuralis*, very small, *Pyrausta sanguinalis*, *Homaeosoma sinuella*, *Acidalia promutata*, *A. rubricata*, *Botys flavalis*, *Endotricha flammealis*, *Crambus geniculeus*, *Odontia dentalis*, and *Emmelina monodactyla* were taken. A single individual which I am not prepared to refer to *Setina irrorella* with certainty, because it may be *S. aurita*, and an abundance of larvæ and their beautiful cocoons of *Simaethis nemorana* (?) on the fig-leaves are perhaps the only other species noticed worth mentioning. The great abundance of *Mantis religiosa* at this time is perhaps worth noting, and, on the rocks by the side of the road, the large females were in considerable numbers, no doubt there in order to lay their eggs, which some did in due course, after they had been in England a week or two. There were large numbers of males and females everywhere among the herbage.

Lepidoptera in Cumberland—Buttermere, etc.

By GEORGE WILKINSON.

A journey to Buttermere in search of larvæ of *Melampias epiphron* was very disappointing. With a companion, I set off about three o'clock on the afternoon of June 29th. We went *viâ* Dean Moor and Ennerdale, along the mountain path, up through Scarth Gap to Honister, and back *viâ* Buttermere, Crummock, and Lowes-water. On the moor at Dean, which looks a good place for collecting, I noticed a few *Saturnia pavonia* flying furiously. This is a very late date for this species in Cumberland. I took a few *Coenonympha pamphilus* and *Rumicia phlaeas*, and noticed several micros—*Glyphipteryx fuscoviridella*, *Ephippiphora cirsiana*, *Gelechia ericetella*, *Crambus pratellus*, *Catoptria ulicetana*, *Ephippiphora pflugiana*, etc. At Ennerdale, *Larentia viridaria* (*pectinataria*), *Cabera pusaria*, *C. exanthemaria*, and *Melanippe montanata* were very common. By seaching the fir-trunks I got three nice *Hadena dentina* and one *Gonodontis bidentata*. *Hepialus velleda* was netted as it flew about above the rushes which grow along one end of the lake.

The most notable feature between Ennerdale and Buttermere was the abundance of night-jars, and the journey, being between the hills, the jarring of these birds made the place seem quite wierd between nine and twelve at night. When Honister was reached, I found everything so wet, that I could not sweep for larvæ, and, by searching, nothing was to be seen but the grass hanging with great drops of dew. Along the shores of Crummock, I took several species of Noctuids sitting on posts—*Hadena dentina*, *Xylophasia rurea*, *H. thalassina*, *H. pisi*, and a single *Apamea unanimis*. In the woods at Scale Hill, I took one *Tephrosia crepuscularia*, several *Spilosoma menthastri*, and saw *Scoparia truncicolella* common on Scotch fir-trunks. . July 2nd saw *H. dentina* still about, whilst *Cosmotriche potatoria*, *Arctia caja*, and *Melitaea aurinia* appeared in my breeding-cages. On July 4th, larvæ were scarce in the *Silene* pods, the recent rains having dashed the plants to the ground, and the pods were full of water. Several dead larvæ were seen, having been no doubt drowned. Between now and the 13th, some nice forms of *A. caja* appeared, and, on the 15th, *Miana fasciuncula* was abundant, but all were of the drab form, and not one of the bright red form so common at Carlisle was noticed. *Camptogramma bilineata* was in swarms, and a few *Coleophora discordella*, *P. nigromaculana*, and *Scoparia cembrae* were taken along the railway-banks. A visit to Schoose Wood on the 18th, was productive of a great many insects, the most common being *Phlogophora meticulosa*, *Cilix glaucata*, *Emmelesia alchemillata*, *Eupithecia minutata*, *Miana arcuosa*, *Hadena gemina*, *Emmelesia decolorata*, *Hypena proboscidalis*, *Leucania pallens*, *Triaena psi*, etc. All these were taken by dusking alongside the wood. On the 20th, *Polyommatus icarus* was in swarms on the site of the old ironworks, and some nice females were taken. The 21st was not a bad day, and a visit to Honister was undertaken. This is always a laborious undertaking, as after a ride of about twenty-two miles, there is a walk up Honister Pass of another two, and then a climb of over 1000ft., and, by that time, one feels generally pretty well done up. This particular visit was for the females of *Melampias epiphron*. In 1900, Mr. Alderson reared a few through as a second-brood, and I had intended to give him the chance of again trying his hand with the species. Although very common, they were well worn, and only about six good ones were taken, including a nice aberration without any red markings. I was fortunate in getting some fertile females, and the young larvæ resulting I sent on to Mr. Alderson, who will no doubt report later. *Crambus ericellus* was very common, but I only took a few, as I was quite tired and wanting in energy to go after them. *C. ericellus* is in fine condition just when *M. epiphron* is over, and *C. furcatellus* is in the same condition when *E. epiphron* is just coming out. On the way back *Triaena psi* was found to be common, and I took a nice female of *Tephrosia bistortata*, which I kept for ova, but it subsequently proved infertile. I also got one *Xylophasia lithoxylea* sitting on a fir-trunk at Scale Hill. This place was productive of some nice *Argynnis aglaia*, *Epinephele ianira*, and *Coenonympha pamphilus*. *Brenthis selene* was common but very worn on July 21st. A female specimen of *Lasiocampa quercûs* emerged from larvæ taken from heather on May 19th, and fed on hawthorn, and a ♂ emerged on August 3rd. This makes the third I have reared in the last two years from larvæ of the same year, and I have pupæ now (September 17th, 1907)

resulting from larvæ taken along with the above, going over. *Emmelesia decolorata* continued out on the 25th, and, on the 28th, I took two males of *Satyrus semele* on the shore. I was also fortunate enough to take a slight aberration of the female of *Polyommatus icarus* with a dash along the inner margin (underside) of the forewing. I also captured a male with three red spots on the upperside of the hindwings. [This is most exceptional. What was the character of the spots?—Ed.] Up to the present (September 17th) the season has only been very moderate, and insects have been very much out of their time owing to the bad weather. I was quite unable to get *Coenonympha tiphon* (*davus*) and many other species through bad weather during week-ends. One notable item of the year has been the entire absence of larvæ of *Aglais urticae* here.

The Lepidoptera of Savoie—Grésy-sur-Aix and Mont Révard.

By J. W. TUTT, F.E.S.

With the morning of August 20th, another move was made, this time to Aix-les-Bains, a rather long and tiring journey on a hot day, but safely reached, and the morning of August 21st found me on the road to Grésy-sur-Aix. Here everything was absolutely parched, there had been no rain for weeks, and the usual haunts were a wilderness, the plants withered, the flowers absent, the herbage often dried, but how delightful is the return, if only for a few hours, to the old place, to see the insects and flowers one feels one knows so well. Since my first introduction to the Grésy hills, by Dr. Chapman, some thirteen summers before, I have revisited them again and again, and to me they breathe the freshness of renewed vigour, for here I love to rest a few days, before attempting the, to me, more arduous work on the higher mountains, and to prepare, as it were, for the labour to come. Somehow, I never feel worried about what I am likely to catch at Grésy now; I feel that I long ago exhausted the butterflies that I can possibly take at the time of my visit, and, if a good thing comes my way, I am always glad, and there are many species that are always rare, and that one has to pick up a series by getting a specimen or two at the time. On the lovely hot morning of the 21st then, I went along, most lazily inclined, and picked up the *Melitaea parthenie*, *M. didyma*, *M. cinxia*, and *Brenthis dia* as the fates offered them, and studiously left the *Callimorpha hera* on the flowers of the tall thyme plants. I wish some of our subscribers would tell me just before starting for the summer holiday that they wanted ova of *C. hera*, because it is some excuse to take a few females, and I do like to catch the lovely creatures, and while, as at present, a purpose is wanting, I have not a real reason for disturbing them. The *M. parthenie*, as usual, gave some heavily-marked females, and made one again doubt the alpine race of *M. athalia*. All our common Melitæas have alpine races—*M. parthenie* has its var. *varia*, *M. dictynna* its small form *alpina*, *M. aurelia* its race *alpina* and its ?still higher alpine race *asterie*, and *M. athalia*, I believe, a heavily-marked race that haunts the valleys up to about 5000ft., not much smaller than the typical form of the lowland woods. Here I may note that I seem to have erroneously recorded the captures of *M. asterie* on the alps of south-eastern France, for the species I took, and meant to record, was certainly *M.* var. *varia*,

a nice form of which I got on the high alps far above Abriès. This is very culpable, as I ought not to have been guilty of such a lapse. When I say that insects were rare at Grésy, it must only be considered as comparative. *Enodia dryas* abounded on the isolated lucerne heads, but the males were badly worn, and the females chipped. A tiny race of *Polyommatus icarus* ab. *icarinus* was also abundant, and so was *Erebia aethiops*, in the very finest condition, the spotting remarkably heavy, as usual, and the best specimens just as easy to scratch. *Hipparchia arethusa* was in good condition, but small and scarce, and no females, and whilst all other species were early, the drought seemed to have thrown the species here late. *Colias hyale*, instead of being at its best, was nearly over, but *C. edusa* was in excellent order, and *Agriades bellargus*, rarely seen abundantly in mid-August, was well out, even females falling to the net. The *Coenonympha pamphilus* undersides were particularly brown. A single small male of *Loweia dorilis* and a couple of rather worn male *Polyommatus hylas* were found with an abundance of *Agriades corydon* and a single *Hesperia alveus*, as well as plenty of *Urbicola comma*. A pair of *Limenitis camilla* were taken, the male very small, hardly so tiny, however, as some of those from Digne. The second-brood specimens of *Leptidia sinapis* were also much smaller than usual. Of species usually common, of which few only were seen, one may note *Epinephele tithonus*, *Pararge megaera*, and *P. maera*, and whilst *Epinephele ianira* was common enough, *E. lycaon* was not seen at all.

Next day, August 22nd, the continued fine hot weather tempted one to get as high as possible, and hence, by a morning train, I made the ascent of the Révard. It was a lovely day, but the summit is much too grazed for insects. Still, the day was not altogether wanting for sport. On the highest point of the Révard, several fine large *Papilio machaon* flew like birds, swift and wary, settling with open wings, quickly drawn up, and ready to dart off at the slightest sign of a too near approach. It was splendid sport catching the alert and beautiful creatures, a memory to last till the summer holidays come round again. Here, too, were a few female *Parnassius apollo*, in none too good condition, suggesting that the species was nearly over. On the thyme blossoms in one of the gullies, *Gonepteryx rhamni* was abundant; here, also, was *Aglais urticae*, *Pieris brassicae*, *Polyommatus icarus*, *Argynnis niobe*, and *Hipparchia alcyone*, all in fine condition, with a single *Polygonia c-album*. Over the pasturages, magnificent *Colias edusa* were flying swiftly, some of the largest I have seen, *C. hyale* also occurring therewith. The commonest insect, however, was *Urbicola comma*. *Hesperia alveus* occurred, but was too worn to keep examples. The only Crambids observed were *Crambus geniculeus* and a very pale form of *C. tristellus*. All these specimens were captured at an elevation of 5000ft.

Entomological Societies and Scientific Records.

By S. J. BELL.

As one of those secretaries whose reports, by implication rather than by overt statement, are attacked in the Rev. C. R. N. Burrows' article on "records," I crave permission to enter a protest on behalf of the unfortunate reporting secretary.

Belonging to the genus abhorrent to the *Record's* editorial mind (Genus, *Collector*; Species, Mere). I am not so deeply moved in the matter as the Rev. C. R. N. Burrows, who evidently spends weary hours burrowing amongst records, ancient and modern, in the faint hope of discovering something of value, even as the more humble rag-picker burrows in the city dustbins in the dewy morn! Even I, however, recognise that, if such records are to be of any use whatever, they must be detailed and complete, and I have therefore endeavoured to obtain such records, for the inclusion in the reports of that Society to which, for my sins, I am reporting secretary. I trust that the Rev. C. R. N. Burrows' efforts will be attended with more success than mine have been.

Having found it impossible to note from labels (*when attached*) the dates and locality of an exhibit before me, and at the same time record remarks being made during the announcement of subsequent exhibits, I announced, with the approval of the Society's council, that no exhibit would be reported unless the exhibitor furnished the secretary with an adequate report of the points of interest in connection with the same; the result is that on an average, about *one-third* of the exhibitors furnish me with such notes, and those, with a very few honourable exceptions, only do so under pressure.

Now any reasonable being must surely admit that I am 'twixt devil and deep sea! If I record only those exhibits of which adequate details are given to me, it must appear that the Society does nothing worth recording at its meetings; on the other hand, if I endeavour to do justice to the transcendent interest of those meetings by noting what I can of exhibits not so reported to me, I incur the wrath and contempt of the Rev. C. R. N. Burrows, editors, and others who hunger and thirst after scientific accuracy and wealth of detail.

I suggest that there are two methods more likely to lead towards the distant goal of perfect reports than abusing secretaries or even (save the mark) editors! The one is to persuade the individual entomologist of the necessity of properly recording his capture, exhibit, or what not. This I have failed to accomplish in a modest way, partly owing to the indifference and indolence of the aforesaid individual, and partly, be it admitted, because he often lacks the knowledge necessary for the full appreciation and description of the facts to which he wishes to draw attention. The other and better way is for those gentlemen who thrive on records, and possess the scientific knowledge necessary to their proper compilation, to add shorthand to their accomplishments, and then present themselves as candidates for secretarial posts in our entomological societies! I, for one, in the cause of science and my own peace of mind, shall be only too happy to resign the doubtful privileges of secretaryship in favour of such an individual *when* he presents himself. So far as my experience goes, however, those best qualified to act as secretaries are usually the least willing or able to spare the necessary time—to which, no doubt, it may be replied that my case is an illustration of the old saw that "Fools rush in where angels fear to tread."

Lepidoptera of the Juras—Versoix.

By J. W. TUTT, F.E.S.

My last day's collecting in 1906, August 24th, was in the neighbourhood of Versoix, a village on Lake Geneva, and just north of the city. These waste lands on the foothills of the Juras form a delightful collecting-ground, and under another cloudless sky, Mr. Muschamp and Dr. Denso, with Mr. Muschamp's active little son, piloted me over some fresh entomological ground. The season, I was warned, was over; the drought had hurried off everything, and little could be expected. To a certain extent this was true, yet a most interesting morning's outing was the result. One of the first insects noted was *Celastrina argiolus*, apparently ovipositing on the hedges, and, as usual in this district, *Colias edusa* and *C. hyale* swung rapidly across the roadway, or flew busily from flower to flower of the lucerne or sainfoin plants. In a rough overgrown meadow, *Satyrus circe* was discovered, and here, in glorious abundance on the scabious flowers, were quantities of newly-emerged *Brenthis dia*, *Melitaea parthenie*, and *M. didyma*. The latter were undoubted second-brood, with fine pale females that are so characteristic of the lowland autumn race, and quite different from the darker examples of Beauvézer and Clelles which had been met with during the preceding month. *Erebia aethiops* was comparatively rare, and the second-brood of *Melitaea phoebe* was only just on the move, or otherwise rare. Here, too, webs of larvæ of what we thought were *Melitaea aurinia*, were found, but Mr. Muschamp suspected them to be *M. dictynna*, a species for which this place is a locality, and as we failed to rear those we brought away, we at any rate cannot say for certain what they really were. On the drier ground towards the river, *Agriades bellargus*, too, was common, although the females were scarce; there were plenty of *Hesperia alveus*, a fine strongly-marked form of the type I know only in the south of France, but *Erynnis altheae* was rather scarce, a second-brood of rather small specimens evidently just emerging; *Urbicola comma*, rather large females, with somewhat small white spots on the underside; whilst *Polyommatus hylas* was going over, and *Aricia astrarche* not at all common. On the other hand *Issoria lathonia* was frequently seen and in fine condition, and *Pontia daplidice* had also evidently only just emerged, and was not uncommon. *Plebeius argus* (*argyrognomon*) was still out, and there were some pigmy *Polyommatus icarus*, suggestive of the tiny specimens observed at Grésy-sur-Aix a few days previously. Very few moths were noted, possibly due to our inattention, and not to absence of the moths, but among others, *Acidalia straminata*, *A. immorata*, *Botys flavalis*, *Adkinia bipunctidactyla*, etc., were sampled. *Cerigo matura* buzzed about by day; it had been common at sugar at the Bois des Frères the preceding evening, August 23rd. On this evening three of my fellow-members of the Geneva Entomological Society piloted me round one of their best sugar preserves, and generously made me accept the spoils of the chase. Mr. Mottaz had kindly gone ahead and prepared the ground, and, by the time I arrived with Mr. Muschamp and Dr. Denso, the moths had begun to arrive. Five large Catocalas haunt the trees, including *Catocala fraxini*, *C. nupta*, *C. promissa*, and *C. sponsa*, but the night was not too favourable, and the

commonest species observed were *Leucania albipuncta*, *L. pallens*, second-brood, *Noctua xanthographa*, *Cosmia trapezina*, some very nice forms, *Cerigo matura*, *Agrotis exclamationis*, *Caradrina ambigua*, *Miana furuncula*, *Amphipyra pyramidea*, etc. A single *Citria fulvago* (*cerago*) appeared, and some worn *Boarmia repandata* and *Phycis tumidella* were also observed. One suspects that, on the whole, the district of Geneva would be a rich one in Noctuids.

So ended my collecting for 1906. The memories of a lovely summer holiday still linger as I empty the boxes in the hope of refilling them again this year, and now, within a week of starting afresh, if my hopes be fulfilled, I can only trust that I may derive as much pleasure from the outing of 1907 as from that of 1906. To those who regularly collect week by week in the country, and whose lot has been cast in more leisure places, the hurry of a month's butterfly-hunting possibly seems a poor entomological result compared with their more thorough and scientific exploration of their own home-lands. Still, it is all I have now to offer, and the notes here published are the firstfruits of the apparent results.

A Fortnight in the Highlands.

By H. St. J. K. DONISTHORPE, F.Z.S., F.E.S.

On July 15th, I went up to Edinburgh to join my friend, Professor Beare, for a trip in the Scotch Highlands. *Antalia puncticollis* and *Ptenidium wankowiezi?* were taken in numbers in sheep-dung on the Pentlands, and I went on to Rannoch, and from there to Newton-more, where my friend was to join me again. At the former place, where I only stayed one day, *Trichius fasciatus* was the beetle sought for, but, on account of the backward year and the total absence of flowers, it did not put in an appearance. It, however, turned up later on umbellifers, at Aviemore. The best capture at Rannoch was a pupa of *Athous undulatus* under birch bark, this has since hatched, but is, alas, a cripple; it is very disappointing, as the insect has not been taken since Turner's time. *Carabus glabratus* was taken on the road, *Saperda scalaris*, *Asemum striatum*, *Clerus formicarius*, and *Tripodendron lineatum* occurred in the saw-pit, *Tropiphorus obtusus* and *Sericosomus fugax* were swept, *Cryptophagus parallelus* was beaten off dead moun-tain-ash flowers, *Ips quadripustulata*, *Quedius xanthopus*, *Scydmænus exilis*, and *Eros aurora*, with a lot of its curious larvæ, were taken under bark, and *Otiorrhynchus blandus* was common under stones. At Newtonmore, our best capture was a small series of *Cryptohypnus pulchellus*, in the shingly bed of the river; with it occurred *C. riparius*, *dermestoides*, and the var. 4-*guttatus*, *Coccinella* 5-*punctata*, *Aegialia sabuleti*, and *Morychus aeneus*. *Otiorrhynchus septentrionis*, *Magdalis phlegmatica*, *Rhinomacer attellaboides*, *Corymbites impressus*, *Ernobius nigrinus*, *Malthodes pellucidus*, *Cryptophagus parallelus*, *Cispunctulatus*, and a small *Trichopteryx*, in numbers, were beaten off "fir tops," *Harpalus* 4-*punctatus*, *Miscodera arctica*, *Cymindis vaporarium*, and *Pterostichus vitreus* were taken under stones, and *Barynotus schönherri* was picked up on the road. We next moved on to Aviemore, where, under fir bark, *Nudobius lentus*, *Liodes glabra*, *Agathidium convexum*, some eight pupæ of *Astynomus aedilis*, and larvæ of *Dendrophagus* and *Pytho* were found. *Cychrus rostratus* and *Elater nigrinus* were taken

under stones, *Otiorrhynchus maurus* was common on the roads, and *Malthodes mysticus* was swept. Our next stop was Nethy Bridge, where, by beating fir-tops, besides the same species taken before, the best capture was *Magdalis duplicata*; they are, of course, very distinct from *M. phlegmatica*, which was common. Other species, not taken at Newtonmore on fir-tops, were *Atomaria elongatula*, *Corticaria fenestralis*, *Pissodes pini*, *P. notatus*, *Bolitochara lunulata*, *Pityogenes bidentatus*, and *Pityopthorus pubescens*. *Taphria nivale* and *Silpha nigrita* and its larva were found under stones. *Carabus glabratus* and *Tachinus elongatus* occurred on paths, and *Oxypoda pallidula*, *Xantholinus tricolor*, *Ocalia badia*, and *Ptinus fur* were found in sand-pits. *Asemum striatum*, *Rhagium indigutor*, and *Clerus formicarius* were common on Scotch fir-stumps, and the larvæ of *Criocephalus rusticus* were observed to be common in the bark of stumps and felled trees. *Elater nigrinus* and *Rhagonycha elongata* were swept, and the latter was also beaten off young firs and fir-tops. *Nudobius lentus* and *Ips 4-pustulatus* again put in an appearance under bark of fir. Returning south again, *Staphylinus stercorarius* was found in a nest of *Myrmica scabrinodis*, at the Forth Bridge. I may mention that large nests of *Formica sanguinea* were found, both at Aviemore and and Nethy Bridge, and Mr. Saunders tells me this is a new record for Scotland. I only got *Othius myrmecophilus* in the nests, but at Rannoch I took the small bug, *Piezestethus formicetorum*, in some numbers, with *Formica rufa*; this is a new record for this interesting little species, as it has never been taken since Buchanan-White first took it at Braemar.

Lepidopterological Notes for June, 1907.

By J. OVENDEN.

First and foremost, the wretched weather for collecting nearly the whole month of June must be noticed. It opened with a heavy thunderstorm on the 1st, and on the 3rd was cold enough for snow, with a biting wind. Larva-collecting was most miserable work, for if one beat the trees one got soaked through with the moisture, and if one searched one had the same moisture running up one's sleeves and soaking through one's boots. The larvae of *Edwardsia w-album* occurred as usual in Chattenden Woods, but in lessened numbers than usual. However, to compensate for this, I took over a dozen larvæ of *Petasia cassinea*. Larvæ of *Leucania straminea* also occurred fairly commonly among the reeds by the Medway—30 being taken one night—in company with those of *Leucania pallens*, *L. impura*, and *L. conigera*. *Nonagria geminipuncta* also occurred in the reed-stems, whilst, on the buckthorn, the larvæ of *Gonepteryx rhamni* and *Scotosia dubitata* were to be taken rather freely, and those of *Luperina cespitis* on *Aira caespitosa*, and *Cucullia verbasci*, *Malacosoma neustria*, *Porthesia auriflua*, and *Arctia caja* were very common on their respective food-plants, either at Cuxton or Strood, while larvæ of *Lasiocampa quercûs*, *Porthesia chrysorrhoea*, *Notolophus antiqua*, and *Amphipyra pyramidea* were only represented by single examples. Ova of *Euchloë cardamines* were to be found fairly commonly on the wild mustard by the wood-sides, and those of *Hadena suasa* on the leafless stems of last year's *Chenopodium* plants on the marshes. Among the Diurni, imagines of

Euchloë cardamines, *Gonepteryx rhamni* (hybernated), *Hesperia malvae* (*alveolus*), *Polyommatus bellargus* (*adonis*), *Rumicia phlaeas*, *Nisoniades tages*, and the three common "whites" were to be obtained very freely by working for them, whilst two *Sphinx ligustri*, two *Dicranura vinula*, two *Cilix spinula*, and two *Arctia villica* were all that were noticed of the larger moths usually common here in the imaginal state. The Geometers were fairly well represented—*Tephrosia biundularia*, *Rumia luteolata*, *Melanippe fluctuata*, *M. rivata*, *Coremia designata*, *Phibalapteryx vitalbata*, *Acidalia ornata*, *Camptogramma bilineata*, *Lomaspilis marginaria*, *Iodis lactearia*, *Asthena candidata*, and *Eupithecia isogrammata* were very common, whilst *Eurymene dolabraria*, *Boarmia consonaria*, *B. roboraria*, *Eupithecia linariata*, *E. oblongata*, *E. subumbrata*, *E. venosata*, *Venilia maculata*, and *Angerona prunaria* were less often seen. Sugar produced a fair number of species, but in far less numbers than usual, *Mamestra anceps*, *Hadena suasa*, *Apamea basilinea*, *A. gemina*, *Grammesia trilinea*, *Rusina tenebrosa*, *Agrotis exclamationis*, *A. segetum*, *Miana fasciuncula*, *M. furuncula*, *Noctua c-nigrum*, *Caradrina cubicularis*, *C. morpheus*, *C. alsines*, *C. blanda*, *Xylophasia polyodon*, and *X. lithoxylea* swarming, while *Hecatera serena* was very common on posts, etc., and among the smaller fry to be taken very freely, were *Scoparia ambigualis*, *S. dubitalis*, *Botys pandalis*, with *Rhodophaea suavella* in the larval state, two or three *Ebulea verbascalis* were all that were noted, although some seasons this species is exceedingly common amongst the *Teucrium*. The Alucitids, in the larval state, occurred fairly freely in their respective haunts, but were very loth to fly as imagines; among those taken in the larval or imaginal stages—*Adactylus bennettii*, *Porrittia galactodactyla*, *Ovendenia septodactyla*, *Stenoptilia pterodactyla* (*fuscus*), *Oidaematophorus lithodactyla*, and the new plume, *Hellinsia carphodactylus*.

I have not attempted to differentiate the localities, but the district worked included, not only the immediate neighbourhood of Strood, but the woodlands around Chattenden and Cuxton, the chalkhills of Cuxton and Halling, and the marshes of the Medway.

The Habits and Habitats of Brenthis selene and B. euphrosyne.

By J. W. TUTT, F.E.S.

Our insular ideas of *Brenthis selene* and *B. euphrosyne* lead us, particularly in the south-east of England, to look upon these species as largely lowland, wood-loving, insects, although Scotch and south-west England experience is rather suggestive otherwise. Nor is this general view at all controverted as our experience widens in the direction of the species southwards, for, in the woods at the back of the castle at Hyères, a fine large race of *B. euphrosyne* is quite abundant. Our early views in this direction have, however, long been changed with regard to the latter species, and we have seen it in many quite high localities, of which the flowery meadows at the foot of the Ferpécle glacier on the glorious Dent Blanche, in mid-August, 1899, remain a very vivid picture. The late season of 1907, over the greater part of the Alps, however, has largely increased our knowledge of the distribution of these insects so far as altitude is concerned, as they are no doubt usually over when our own personal visits to the Alps are made.

In 1907, we first observed *Brenthis selene* at Göschenen, the species being abundant on July 29th on the slopes just above Göschenen, between the Sprengi-Brücke and Teufels-Brücke. Many of the specimens were worn, but some were still in good condition. They were flying in the afternoon sun, on a steep bank with an abundance of flowers—scabious, knapweed, hieracia, etc.—on which they rested, and as the sun went off the bank, many took up a position on the summit of a flower, drew their wings up, and slowly slid back into a position of rest, but, strangely, an hour or two afterwards scarcely an individual was to be found in this position, nor did continued searching discover them. The females were less immediately affected by the absence of the sun than the males, and some minutes after the sun had gone off the bank a female was observed busy egg-laying on a small species of violet of dwarf habit, common here among the short grass, eyebright, gentians, etc. She was watched most carefully flying low down among the herbage, and observed to settle on a culm of grass, down which she slid, feeling carefully with the ovipositor as she went, finally depositing an egg about 1½in. above the ground, on a stem of grass, several violet-leaves being quite near the spot where the egg was laid. This was followed by a similar operation on the part of the same female. The first thought was whether the egg could possibly be the hybernating stage at this altitude, but one suspects not. Has any one information on the egg-laying of this species? *Brenthis selene* was also found sparingly in the wood at the back of Göschenen, at the entrance to the Göschenen-Thal, with *B. amathusia*, on July 30th and 31st, and, on the afternoon of the first-named day, in dull weather, a single female was found asleep, seated on the top of a flower with its wings drawn well over its back, at the very entrance to the level piece of ground leading up to the Damma-Gletscher Hotel.

Brenthis euphrosyne was first observed on July 30th, on the steep flower-clad slope just before reaching Andermatt, from Göschenen. It was found about noon flying with a number of quite Alpine species, *e.g.*, *Erebia pharte*, *E. euryale*, *Colias phicomone*, etc., and some other less-expected species, *e.g.*, *Lycaena arion*, *Cupido minima*, etc. It was then seen on August 2nd, 1907, flying on the slopes on the outskirt of the pine-wood between Madrano and Brugnasco. This was a splendid butterfly corner, with a large variety of species. Two or three worn males were noted, and a female was watched as it busily inspected the leaves of a violet growing there, and several abortive attempts at egg-laying were observed. On searching the plants a single egg was found on the underside of one of the leaves, but as that had already changed colour, it had evidently been laid some days. On the following day other specimens were observed flying on the open slopes well above the pine-wood lying above Airolo as one makes the ascent of the St. Gothard Pass, and near the entrance to the Val Tremola. Two females were very busy inspecting the violets, but although older eggs were soon discovered, the operation of egg-laying was not observed. On August 5th and 6th the species was unexpectedly found at a much lower elevation, fairly abundant but worn, on the flowery slopes that edge an alder wood near the little bridge between Airolo and Piotta, flying amongst crowds of *Melanargia galathea*, *Dryas paphia*, *Melitaea didyma*

Brenthis amathusia, *Lycaena arion*, *Erebia aethiops*, etc., and spreading into the glades of the alder wood through which the Ticino flows, a very different locality from the bleak, exposed slopes on the St. Gothard, where its only friends were *Erebia tyndarus*, *E. euryale*, *E. mnestra*, *Coenonympha satyrion*, *Argynnis aglaia*, and *Cyaniris semiargus*. On the early morning of August 8th, 1907, at about 9 a.m., a worn specimen was observed near Brugnasco, feeding on flowers of thyme, to which flowers it seemed especially partial, for the species was observed again this morning, towards noon, on the flowery slopes by the side of the cascade at Piora, flying freely with *Brenthis pales*, *B. amathusia*, *Argynnis niobe*, *A. aglaia*, as well as a host of other mountain species, repeatedly settling on flowers of thyme, scabious, etc. The next time the species came under notice was on August 14th, when several somewhat worn examples were observed flying on the flowery banks of the Roseg Valley, between noon and 2 p.m., amongst *Brenthis ino*, *B. amathusia*, *B. pales*, *Argynnis aglaia*, *A. niobe*, etc. One was observed settling on flowers of eyebright, others on thyme, whilst a female was observed busily inspecting some small violet plants at the edge of a heap of stones, but again the actual process of oviposition was not observed. The last observations on this species in 1907 were made on the Albula Pass, above Preda, a locality made historical by the researches of Zeller. On August 18th, 1907, it occurred with *Brenthis amathusia*, on the Albula road, about 1½ miles on the Preda side of the Hospice, whilst, on the 19th, a really good example was taken with *Polyommatus pheretes* on the flowers of a plant of thyme growing in the stony wilderness forming the floor of the valley still nearer the Hospice, *i.e.*, at some little distance above the source of the Albula, and on the same side of the valley, and not far from the entrance to the Teufels-Thal, and just beyond the home of *Parnassius delius*. Such was our experience with these species in 1907, and it was a new delight to find them and *B. amathusia* at home at from 4000ft.-7000ft. altitude, with such species as *Parnassius delius*, *Erebia tyndarus*, *E. mnestra*, *E. ceto*, *Colias phicomone*, *Polyommatus pheretes*, and in the case of the last specimen taken, within 50 yards of the spot where I captured a fine example of *Erebia glacialis*.

Comparison of the Ova of Melitaea athalia, Rott., and M. aurelia, Nick.

By ALFRED SICH, F.E.S.

Melitaea athalia: Laid in batches, one upon another. Pale yellowish-grey in colour. In shape rather conoid than spheroid. Flat at the apex, and more or less rounded at the base when laid in groups, (but the base would probably be flat if the ova were laid simply on leaves). The egg is widest at about one-third from the base, when the outline slopes up to the wide flat apex. The micropylar axis measures 0·63mm., while the horizontal axis is only a little less, measuring 0·62mm. The micropylar area is extensive, measuring 0·3mm. in diameter. From the boundary of this area, about twenty primary ribs run to about halfway down the walls of the ovum. These rather prominent ribs are about 0·07mm. apart, with wide furrows between them. The furrows are crossed by about a dozen secondary ribs which

are rather weakly developed, thus the furrows have a rather smooth appearance. The walls of the egg below the termination of the ribs are almost smooth showing only an indication of their cellular structure. The micropylar rosette consists of about eight more or less pear-shaped cells; these are surrounded by two rows of small quadrangular cells which are encircled by two rows of similarly shaped, but very much larger, cells. [Described, July 31st 1907, from ova, kindly sent by Herr Max Gillmer, from Teplitz in Bohemia.]

The egg of this species is larger and has a more conical appearance than that of *M. aurelia*. The secondary ribs are much weaker and the lower half of the walls are almost smooth.

M. aurelia: Pale yellowish-grey in colour, rather shining. Spheroid in shape, flattened at apex and base, greatest diameter at about $\frac{1}{3}$ from base. Rather flat at the apex, whence the walls slope evenly outwardly to about $\frac{2}{3}$rds. down, and then curve inwards rather rapidly to the base. The vertical axis measures 0·55mm., and the horizontal axis, 0·53mm. About 18 primary ribs run from the micropylar area, to about half-way down the walls where they degenerate into rows of pits. These ribs are about 0·06mm. apart, fairly strong, with a wide, rather shallow, furrow between them. Their ridges are fairly prominent, but blunt. The ribs cease entirely on reaching the micropylar area. A number of secondary riblets run horizontally round the walls between the primary ribs, but cease with those ribs. The lower half of the egg is shallowly pitted in a sponge-like manner, and likewise the base. The micropylar area is slightly sunken. The boundaries of the cells not well marked. There are about three rows of large quadrangular cells between the terminations of the ribs and the rosette. The rosette is about 0·04mm. in diameter, and consists of about eight very small more or less pear-shaped cells. The eggs, 22 in number, were loosely attached to the upper surface of a leaf, they were laid in a group consisting roughly of two rows. [Described 26th July 1907. The eggs were kindly sent by Herr Max Gillmer, from the Mosigkauer Haide, Anhalt.]

The ovum af *M. aurelia* is smaller and more globular than that of *M. athalia*. The secondary ribs are more strongly sculptured, and the walls below the primary ribs are pitted, not almost smooth as in *M. athalia*.

Notes on Hemithea aestivaria, Hb. (*with plate*).

By (Rev.) C. R. N. BURROWS.

Unlike *Gometra papilionaria*, the last species of the *Geometrinae*, to which I had the pleasure of calling attention, *Hemithea aestivaria* is one which has suffered much from the uncertainty as to its correct name. There is no doubt but that the lepidopterists of bye-gone days often deceived themselves, or were deceived (unintentionally, of course), in the identification of species, and in the application of names, and this, we, their successors, can easily understand, and make excuses for, when we remember the difficulty of communication, and especially of exchanging specimens, in times happily now long passed away.* Many mistakes were made and copied, to the great

* As lately as 1872-75, I found it impossible to send home set specimens from Natal, except as merchandise—unless I happened upon a friend on his way to England, and willing to carry the parcel for me.

detriment of study in these days. We, therefore, try to be very gentle with those who are now laboriously striving to disentangle, elucidate, and explain the mistakes of the ancients, hoping that, in due course, their efforts will result in what we all desiderate, a final, stable, nomenclature. All this to explain why, when I took this species in hand, I asked for ova of *Hemithea thymiaria*. When my paper was announced, it had become *H. strigata*, and now it has bloomed out into *H. aestivaria*. Really this confusion of my own is quite without excuse, as in "Notes on the Fauna of the London district," laboriously compiled by Dr. F. J. Buckell, and after his regrettable retirement, continued and completed by our friend Mr. L. B. Prout, and published in the *Transactions of the City of London Natural History Society*, 1900, this insect is named *H. aestivaria*.

The reason for the adoption of this name is given by Mr. Prout in his note on "The synonymy of the Emerald Moths" (*Entomologist's Record*, vol. xii., pp. 181-182), in which he shows that Linné's name is uncertain, that Schiffermüller's *H. thymiaria*, though cited as from Linné, was founded upon a confusion of this species with *Thalera fimbrialis*, Scopoli, and was based upon the erroneous assumption that our species feeds upon thyme, the thyme-feeding species being *T. fimbrialis*, about which I shall have a word to say later on. Then the name *strigata* of Müller (1764), it is stated, cannot stand, as Scopoli had published another *strigata* amongst the Geometers the previous year. I pass by references to other names and uncertainties, as they can be studied at leisure in Mr. Prout's paper.

I have several times asked for any information in the way of habits, variation, or anything else about this insect. As I have received none, I presume that I am justified in concluding either that so common an insect does not invite examination by its captors, or else that there is really nothing to say about it, aberrations or varieties not being known. Nor is there much information to be gathered from the books to which I have access, nor have my friends or correspondents directed my attention to any books or records to which I have not access. All I can find are reiterated records of its capture, under conditions when it would be a matter of astonishment if *H. aestivaria* were not taken. As to its occurrence in Britain, Meyrick gives England, Forfar, West Ireland, common. I have collected records from Great Malvern, Whitbarrow, Bromley (Kent), Nottingham, Abbotts Wood, Epping Forest, Burton-on-Trent, Ireland, Leominster, Chiswick, Woodford, St. Ives (Hunts), Chalfont, and Hounslow. Mr. B. G. Cole records the assembling of males in the New Forest. I have been thrown back upon Staudinger's *Catalog*, then, for information. Here I find our insect under the name of *Hemithea strigata*, Müll., 1764.; *aestivaria*, Hb., 1789; *thymiaria*, Gn.; and then as a possible aberration *alboundulata*, Hedemann (*Catalog*, ed. 1901, Theil i., p. 265, no. 2919). This possible aberration will be considered later.

I have not Hübner's original description of *H. aestivaria*. However, the insect is so well known that we may spare that, once we have identified it. Perhaps, however, I may be allowed to substitute Meyrick's diagnosis as being recent and concise.

"Face red-brown, fillet white, crown light green, antennæ in male strongly dentate. Forewings dull green, first and second lines sinuate, whitish, cilia

whitish, barred with dark grey. Hindwings as forewings, but first line absent. A darker discal mark. Termen sub-caudate angulated."

To this description I would only add that the underside (how sadly undersides are neglected) is spotless, with the exception of the fringes, which are spotted, as on the upperside. The only variation which I have noticed, save such as is obviously due to fading of the peculiar green shade which characterises the species, is the spreading of the dark spots upon the cilia (a specimen showing this peculiarity is in Mr. Prout's collection), and there is sometimes a suspicion of darkening between the transverse lines upon the forewings, suggesting a band, but it appears to me to be more the effect of imagination than a fact. There also appears to be a little variation in the distance between the transverse lines, with a slight tendency in the inner line to become obsolete. Otherwise there is but little difference between one specimen and another so far as I have been able to observe.

The form *alboundulata*, which Staudinger mentions with a query as to its being this species, is a foreigner, and Mr. Prout has been good enough to look it up for me. Hedemann, in a paper entitled "A Contribution to the Lepidopterous Fauna of Amurland" (*Horae Soc. Ent. Ross.*, xiv., p. 511, pl. iii., fig. 8), gives a description and figure under the name. Mr. Prout has translated his words thus:—

"Dull blue-green forewings, with a darker central band, enclosed by two wavy whitish lines, hindwings with a wavy whitish line, the lighter fringes chequered with brown on the nervures. Frons and palpi red-brown, vertex white, antennæ finely ciliated, yellowish, thorax and abdomen green, legs yellowish-grey. The hind tibiæ of the male compressed (or aborted, which is one of the distinctive features of the genus *Hemithea*). Form of wings exactly as in *strigata*, Müll., to which it comes nearest, but from which it is at once distinguishable through its more *grey*-green colour (He has called it above dull *blue*-green!) and the whitish transverse lines of the forewings. Of these, the first is much further from the base than in *strigata*, hence much nearer the second line, and the enclosed darker band is consequently narrower. Also, in *alboundulata*, the transverse lines are more strongly angulated. The hindwings have, in *strigata*, a dark lunular discal spot [Does he mean as in *strigata*, but the figure does not show this?]. The transverse lines as in that species. The undersides of all the wings and fringes are clear white-green, silky, without any markings. At Blagoweschlschemsk (a place situated in Amurland).

Mr. Prout, and I, by his kindness, have examined his figure, and have come to the conclusion that Staudinger is probably right. Mr. Prout writes me that no such species has ever turned up in subsequent explorations of the region from whence it came. The colour is right, the lines have the same form, but the two on the forewings are much closer together than in our *H. strigata*. This latter however, is not an uncommon form of variation amongst the Geometrids, as in the case of *Himera pennaria*, *Eugonia quercinaria*, in the *rotundaria* form of *Cabera pusaria*, and many others. Thus far, therefore, the identification would appear to be certain. But the figure, otherwise a good one, does not show the broadly chequered fringes, nor a sufficiently tailed hind-wing. I may add to this, that the figure gave me the impression of having been made from a specimen which had lost its fringes, which may explain why, in the description, the fringes of the hindwing are spoken of as unspotted.

This is as far as I can go with the variation of this very invariable insect.

(*To be continued*).

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from* p. 171.)

Family VI: EPHIPPIGERIDÆ (= Subfam. V: *Pycnogastrinae*, Kirby).

This great family contains a large number of curious, heavy, flightless grasshoppers, occurring through the Mediterranean countries, but dominant in the western part of that province. A number of species occurs in Northern Africa, but the majority are peculiar to the Iberian Peninsula; a few species are recorded from the Mediterranean islands, Italy, and the Balkan Peninsula, and one species is found in Central Europe as far north as Belgium.

The wings are absent, and the elytra are reduced to mere flaps, the venation being highly modified for purposes of stridulation. It is remarkable that the females have these organs as well-developed as the males, and are equally capable of producing sounds. This is a departure from the general rule, and is, perhaps, connected with the fact that these insects stridulate when angry or alarmed. Grasshoppers generally only stridulate when undisturbed, but the *Ephippigeridae* will chirp angrily when held in the fingers, and endeavour to bite the offending captor.

They are sluggish and ponderous insects, and may be found slowly crawling about on bushes and shrubs; they assimilate well with their surroundings, and are difficult to see, but with care may be stalked down as they betray their presence by their stridulation. The eye becomes accustomed to distinguish the outline of the immovable creature, but a keen observer will often detect them by the short quick movement of the elytra.

Owing to their sluggish habits and incapacity of flight, the distribution of the species is generally restricted, and consequently the multiplication of forms is great, while their discrimination is subtle. The Spanish and Portuguese species are dealt with by Bolivar in his "Catalogo Sinoptico de los Ortopteros de la Fauna Liberica"; for further information concerning this interesting family, the student is referred to Brunner's "Prodromus," various works by Finot, and above all to the numerous short articles by Bolivar, whose knowledge of this family is unrivalled.

The *Ephippigeridae* are probably omnivorous; they are certainly carnivorous; if several specimens are kept together alive in a box, they will always mutilate each other, and fight savagely, tearing each other with their powerful jaws; it is not difficult to keep them alive, and it is interesting to watch their habits; their large round head, with prominent eyes, gives them a grotesque semi-human appearance, though they are not such entertaining pets as the Mantids.

The genus as understood by Brunner was so large as to be unwieldy, and it has been split by Bolivar into a number of genera and subgenera; the latter should be given generic rank.

[The writer claims special indulgence for the faults of this part of the paper. Though he has taken a number of the species in different parts of Spain, and in the Balkans, he is far from being familiar with the characters and distinctions of the whole group, and this part of the papers dealing with the *Ephippigeridae* is avowedly more of a pure compilation than any other part of this work.]

TABLE OF GENERA.

1. Posterior tibiæ with an apical spine above; prozona of pronotum arched, and so in a different plane from the metazona; prosternum unarmed.
2. Vertex inclined, with the fastigium forming a tubercle, and generally sulcate longitudinally, contiguous beneath with a frontal tubercle, which is narrower than the first segment of the antennæ.
3. Pronotum with no lateral keels separating disc from side flaps, more or less cylindrical .. 1. EPHIPPIGERA, Burm.
3.3. Pronotum with lateral keels separating the disc from the side flaps.
4. Supraanal plate ♂ not separated from the anal segment, which is produced between the cerci; (ovipositor, in the European species, strongly curved upwards).. .. 2. UROMENUS, Bolivar.
4.4. Supraanal plate ♂ more or less separated from the anal segment. Ovipositor slightly curved.
5. Ventral segments entire, that is, represented by a smooth or lumpy central plate; supraanal plate ♂ joined to the anal segment, the point of union marked by a distinct furrow. Cerci ♂ conical or cylindrical and truncate obliquely at the extremity, with an inner tooth in the middle or apical half; infraanal plate ♀ smooth, with no keels.. .. .. 3. STEROPLEURUS, Bolivar.
5.5. Ventral segment represented, at least at the base of the abdomen, by two callosities, placed one on each side of the median line, and near to each other. Supraanal plate ♂ placed below the anal segment. Cerci ♂ large, with the base broad and produced interiorly into a strong tooth, then slender, and longer than the supraanal plate, bent inwards, at the apex, which ends in a sharp point. Infraanal plate ♀ armed at the base with two oblique keels and bent inwards, forming a depression on each side, and membranous in the rest .. .. 4. CALLICRANIA, Bolivar.
2.2. Vertex vertical, with fastigium little prominent; no frontal tubercle; suture of the union with the vertex greater than the breadth of the first segment of the antennæ.
3. Side flaps of pronotum roundly inserted; pronotum with no lateral keels.
4. Elytra present as small flaps .. .. 5. PRÆPHIPPIGERA, Bolivar.
4.4. Elytra absent .. .. 6. BÆTICA, Bolivar.
3.3. Side flaps of pronotum set at an angle; metazona with lateral keels .. .. .. 7. PLATYSTOLUS, Bolivar.
1.1. Posterior tibiæ with no apical spine above; pronotum flat above; (with a keel on each side, separating disc from side flaps) .. .. .. 8. PYCNOGASTER, Grælls.

Genus I: EPHIPPIGERA, Burmeister.

This genus, in the strict sense as defined by Bolivar, includes a number of species inhabiting Spain, Portugal, and Italy, as also the north part of Africa. It is characterised by the almost cylindrical pronotum, with no lateral keels, so that the disc passes into the side flaps with no marked division.

TABLE OF SPECIES.

1. Supraanal plate ♂ rectangular, with more or less prominent lobes.
2. Cerci ♂ bifid apically (short, ending in a strongly curved tooth, sometimes also with an internal tooth) .. .. 1. PROVINCIALIS, Yers.

2.2. Cerci ♂ conical or truncate.
3. Cerci ♂ conical.
4. Pronotum with disc uniform, rugulose; hinder part arched .. .. 2. VITIUM, Serv.
4.4. Pronotum with disc marked with black; hinder part raised, but not inflated .. 3. CRUCIGERA, Fieb. (=*bitterensis*, Marq.)

3.3. Cerci ♂ conical, but obliquely truncate at apex, with an internal tooth near the apex 4. CUNII, Bol.

1.1. Supraanal plate ♂ triangular or rounded.
2. Supraanal plate ♂ triangular.
3. Elytra densely reticulated.
4. Elytra flat, but little elevated .. .. 5. PERFORATA, Rossi.
4.4. Elytra very distinctly convex.
5. Pronotum rugose .. .. 6. TERRESTRIS, Yers.
5.5. Pronotum smooth .. .. .. 7. ZAPATERI, Bol.

3.3. Elytra with open reticulations.
4. Cerci ♂ shorter than supraanal plate, conical 8. PAULINOI, Bol.
4.4. Cerci ♂ longer than supraanal plate.
5. Anterior tibiæ with two rows of spines; Spanish species .. .. 9. HISPANICA, Bol.
5.5. Anterior tibiæ with one row of spines above, or only an apical spine .. 10. DORSALIS, Fieb.

2.2. Supraanal plate ♂ rounded.
3. Side flaps of ponotum straight beneath.
4. Anterior tibiæ with one row of spines above, or only an apical spine.
5. Ovipositor four times longer than pronotum.
6. Feet long and slender; Spanish species 11. LONGICAUDA, Bol.
6.6. Feet not noticeably long and slender, French and Italian species.. .. 12. BORMANSI, Br.
5.5. Ovipositor three times longer than pronotum. (Feet not noticeably long. Spanish species).
6. Size medium (♂ l.-corp. 18mm., l.-ovip. 17mm.) .. .. 13. AREOLARIA, Bol.
6.6. Size larger (♂ l.-corp. 28mm., l.-ovip. 24mm.) .. .. 14. PANTINGANA, Navas.
4.4. Anterior with two rows of spines above .. 15. CARINATA, Bol.

3.3. Side flaps of pronotum sinuate beneath.
4. Supraanal plate ♂ longer than cerci .. 16. SAUSSUREANA, Bol.
4.4. Supraanal plate ♂ as long as cerci .. 17. DILUTA, Bol.

HEMIPTERA.

TRIECPHORA VULNERATA IN EAST KENT.—I found a single specimen of this very handsome, but local, Homopteron, on June 3rd, on the railway cutting at Snowdown, halfway between Adisham and Shepherdswell stations, on the line from Canterbury to Dover.—MALCOLM BURR. *June 6th*, 1907.

VARIATION.

CIDARIA PICATA AB. LACTEOMARGINATA.—At 9.20 p.m. on July 13th, 1906, I took a female *Cidaria picata* at rest on a flower-head of

Centranthus ruber in my garden. Of the pupæ obtained from eggs deposited by her, fifteen produced imagines in August of the same year. The other pupæ lay over the winter and emerged in May and June, 1907. Among these latter appeared, on June 10th, a beautiful aberration which, occurring in a species so little liable to variation, may perhaps be deemed worthy of a separate name. For this I have fixed upon *lacteomarginata*, because the whole subterminal area (posterior to the green central band) is entirely devoid of green, being of a dull creamy-brown except for two small black, horizontal, wedge-shaped marks, situated a little inside the outer margin, and about a third of the way down it from the apex. This specimen was killed with chloroform—an agent I have invariably used of late years in dealing with delicate insects, on which I feel sure both ammonia and cyanide of potassium have a deleterious effect,—(Rev.) G. H. Raynor, Hazeleigh Rectory, Maldon. *August 27th*, 1907.

NOTES ON LIFE-HISTORIES, LARVÆ, &c.

Egglaying of Emmelesia blandiata.—There were thousands of individuals of this species flying just before and just after the sun went off the flower-covered banks, a little way above Göschenen, on the afternoon of July 29th, 1907. They flew very gently directly above the herbage, and the females, standing fairly high on the plants, deposited their pale eggs on the upperside of the leaves of the eyebright, just showing its earliest white flowers. I at first thought the moths selected only the upper-sides of the leaves, but, as eggs were found in very varying situations, I came to the conclusion that any position on the upper part of the plant was chosen provided only that, at the time, it was fairly well hidden, so that eggs were pushed in upon the stem, or among the young leaves at the apex, as well as on the leaves themselves. The eggs became more conspicuous as the plant grew, but their change of colour made them considerably less so. The species appeared to be very abundant right through the district.—J. W. Tutt.

On the Pairing of Polyommatus icarus (alexis).—I found *Polyommatus icarus* common to-day, the males very constant, the females showing a good deal of variation both of upper and undersides. The species swarmed on the site of the old West Cumberland Iron Works. The old tip-heaps are carpeted with restharrow, *Lotus corniculatus*, *Silene*, etc. Some of the males were worn, but the females were fine. The latter, when calling, seem to be very restless, and I noticed a single instance of copulation taking place during flight. I saw a female rise, and was watching it, when up came four males; they all made for the female, and one succeeded in joining itself when about a yard from the ground. The actual contact I could not see, as all were in a heap. The females are very lively, and lead the males a merry dance before allowing sexual contact. Not once did a male get *in copulâ* without several attempts and much fidgetting and flying of the female.—Geo. Wilkinson, 241, Moss Bay Road, Workington. *July 15th*, 1907. [This mode of pairing is so unusual a habit among butterflies that one feels that further observation and information is desirable.—Ed.].

Ova of lepidoptera.—*Acidalia decorata.*—Pale green in colour, tall, conical, tapering slightly to the rounded top; length 5 : 3 (widest end = ? base). Surface shiny, a number of well-developed longitudinal ribs, about nine visible on one side. Apparently a large number of faint transverse striations cross the longitudinal ribs at right angles. The ribs go over the two ends, suggesting that the eggs are not attached by the base, otherwise they have all the appearance of being upright eggs. The five eggs examined are laid in a little heap end to end, the narrower end against the broader end of the egg in front of it. [Egg described under a hand lens, August 1st, 1906, laid by a female taken the previous day at Clelles.]

Acidalia rubricata.—A long, slender, somewhat conical, egg when laid loosely, one end only slightly less in diameter than the other, ? micropylar. Of a delicate yellow-green tint, with a number of slender longitudinal ribs, seven apparently on one face, crossed with a number of delicate transverse striations. The eggs are laid in three little heaps of 3, 3, and 6, but one left in the box is laid as a flat egg, its long axis horizontal. Compared with the egg of *A. decorata* (*suprà*), that of *A. rubricata* is more slender, that is, less wide compared with length, much less shiny in tint, the longitudinal ribs rather better marked, the transverse striations less so. It is duller in colour, much less pearly in appearance, and less green and more yellow in tint. It tapers more distinctly at the narrow pole, and is less wide at the opposite one. [Egg described under a hand lens August 1st, 1906. Female taken previous day at Clelles.]—J. W. Tutt.

CURRENT NOTES.

We Britishers go to Switzerland for our holidays in order to leave the bustle of life behind, and one who lives rather among the people than in the hotels feels somehow that, even in the towns, things are moving slower there. This was borne particularly on our notice to-day as we sorted out a great pile of magazines, etc., for the binder. In February, 1862, was published the first number of the first volume of the *Mittheilungen der Schweiz. Entom. Gesellschaft.* This volume of 352 pages (about the size of an annual volume of the *Ent. Record*) was completed in May, 1865. Since its start ten volumes have been completed, and the 11th has been commenced, *i.e.*, an average of something like four years per volume. But our word just now concerns vol. x. When this was commenced in 1897 it was intended to index the back volumes and publish the index at the end of the volume. When it was completed in February, 1903, therefore, the title-page was held back for the index. We have now patiently waited 4½ years, and neither title-page nor index has yet arrived. It becomes imperative to get volumes bound, or parts get lost, and so, after trying to slow down to the Swiss standard, we are obliged to bind without title-page or index. Cannot our editor give us a title-page at once for vol. x, and let the index come with vol. xi, when the latter is completed? After all, "work wins," and index-making is only a bit of automatic grind at which many of us have had a turn.

This brings us to another matter, *viz.*, the utter uselessness of much of the material buried in many of the *Bulletins*, *Annals*, and *Transactions* of the foreign societies. After all, the material published by

societies and magazines is only of value so far as it can be got at after publication by those who would use it, yet, an actual index appears to be the very last thing that some of the societies think about. The index (!) to a volume of the *Bulletin della Società Entomologica Italiana* occupies less than a page; of the *Entomologisk Tidskrift*, about a page; of the *Annales de la Société Entomologique de Belgique*, less than two pages. We have often thought that it would be a great gain to science if the Council of the Entomological Society of London stopped publication for a year and put the whole of its income for the year into a good "general" and "specific" index of the volumes already published, so that the matter hidden away could be more readily reached. Excellent articles lie buried for want of means to reach them, and the keenest workers of today have not the slightest notion of the mines of information that are at their disposal could they possibly work them. We trust that the continental societies will soon see their way to give a "Special Index" to each volume they publish, and thus offer some clues, by reference to which lepidopterists may know what lies buried in the ponderous tomes of the past.

Mr. Shuguroff, of Odessa, has published a very useful essay on the remarkable genus *Callimenus*, F. de W., in the *Revue russe d' Entom.*, nos. 3-4, p. 176, December, 1906. The work is in Russian, which renders it useless to most western orthopterists, though this is not so serious as it might have been, for the few members of the genus are confined to South Russia and the Levant. The author describes a new species *C. brauneri*, from the valley of the Don, allied to *C. montandoni*, Burr, from Wallachia. The difficult synonymy is worked out as follows:—*C. pancici*, Br., gives way to *C. longicollis*, Schulth; *C. inflatus*, Br., falls before *C. dilatatus*, Stål; *C. longicollis*, Fieb., is not regarded as synonymous with *C. pancici*, but more likely as identical with *C. montandoni*, Burr. A synoptical table of the species is given, unfortunately in Russian; but the distinctions between the five species is epitomised in a brief Latin synopsis.

Frings publishes (*Soc. Ent.*, xxii., pp. 89-90) the description of a new hybrid *Eutricha* hybr. *johni*, obtained from a cross between *E. quercifolia*, male, and *E. populifolia*, female. Five males and nine females were bred altogether.

Mr. E. Saunders gives (E.M.M.) a list of "Addition to the British Hemiptera-Heteroptera since 1892." He mentions: *Cydnus flavicornis*, Fab. found at Freshwater, in the Isle of Wight, July, 1895; *Elasmostethus ferrugatus*, Fab. taken at Bangor in July, 1900; *Pseudophlaeus waltlii*, H.-Sch., taken at West Walton, in Norfolk; *Corizus hyalinus*, Fab., taken near Gosfield and Norwich; *Drymus pilicornis*, M. & R.; *Ploiariodes baërensprungi*, Dohrn, from Esher and the New Forest; *Nabis brevis*, Scholtz, from Byfleet and Weybridge; *Salda morio*, Zett., from Buxton; *Salda setulosa*, Put., at Poole Harbour in August, 1901; *Xylocoridea brevipennis*, Reut., in Richmond Park, March, 1898; *Myrmecoris gracilis*, Sahlb., at Fleet; *Megaloceraea* (*Trigonotylus*) *brevipes*, Jak., on Culbin Sands, near Forres; *Poecilosctytus vulneratus*, Wolff, at Yarmouth in September, 1897; *Plagiognathus* (*Agalliastes*) *evanescens*, Boh., at Colwyn Bay, Augast, 1890; *Corixa selecta*, Fieb., from the Norfolk coast marshes; and *Corixa saundersi*, Kirk., on Chobham Common.

Our readers will observe that some little change has been necessary

in the sale of the Rev. G. H. Raynor's fine collection of Lepidoptera. It has been arranged that the sale shall occupy two days, *viz.*, on October 22nd and November 5th.

It has been twice recently put on record that *Celastrina argiolus* does not occur in Scotland. We understand from Mr. Sloper that this is not so, and should be exceedingly obliged for records or references to records of this species in Scotland.

Mr. L. B. Prout has been on a trip to America, and was for ten days at Wellington, British Columbia, as the guest of the Rev. G. W. Taylor, the specialist in the American Geometrides.

Can any of our readers please inform Mr. Graves (Turf Club, Cairo) whether there are any German entomologists living at Haifa (Mt. Carmel), Jerusalem, or Jaffa, or who can help him with regard to Palestine examples of *Lampides boeticus*, *jesous*, and *balcanica*?

We ourselves are anxious to write up a more or less model life-history of *Lampides boeticus*, and should be glad of information from any source referring to the species.

We are very doubtful as to the specific value of the American *Celastrina pseudargiolus*. We are unable, from the accounts and figures of Scudder and Edwards in their classical works, to discriminate the insect in any stage from our *C. argiolus*. Can anyone give us evidence on the subject, please? A British entomologist settled in America, or *vice versa*, or a lepidopterist who collects both the Nearctic and Palæarctic species might perhaps be inclined to help.

SOCIETIES.

City of London Entomological Society.—*September 3rd*, 1907.—Exhibits.—Anthrocera trifolii-major, from north Cornwall, end of July, 1907. Most of the specimens having the spots more or less confluent, while in one instance, they were merged into one large blotch occupying two-thirds of the wing-area, Mr. S. J. Bell. Hemithea thymiaria (æstivaria) larvæ feeding upon thyme, marjoram, dock, and knotgrass; Orthosia upsilon (fissipuncta) ab. nigrescens, Tutt; Grammesia trilinea (trigrammica) ab. obscura, Tutt, and Xylophasia monoglypha ab. infuscata, all from Mucking, 1907, Rev. C. R. N. Burrows. Dryaspaphia: Twelve specimens reared from valezina ova, five of which followed the female parent, Mr. J. A. Clark. Anthrocera trifoliimajor from the Norfolk Broads, late July, 1907, mostly with confluent central spots, Mr. H. M. Edelsten. Nemeobius lucina, larvæ and pupæ, reared from ova laid by a West Horsley female, Mr. T. H. L. Grosvenor. Spilodes palealis, a long series taken at Dover, between July 24th and August 3rd, 1907; Rumicia phlæas ab. intermedia from Reigate; Theretra porcellus, with right wings of normal southern coloration, and left of the almost unicolorous yellowish shade often seen in northern specimens, Dr. G. G. Hodgson. Callimorpha dominula, a yellow specimen from Deal; Polyommatus icarus (alexis) ab. obsoleta from Clandon, Mr. C. P. Pickett; Abraxas grossulariata from North London, 1907, including two specimens with wings thickly powdered with black scales=ab. nigrosparsata, Raynor, Mr. J. Riches. *September 17th*, 1907.—Exhibits.—Lycæna arion from North Cornwall, in excellent condition,

although taken between July 25th and 31st, 1907, Mr. S. J. Bell. AGROTIS OBSCURA, two living, but wasted, females taken at Mucking, on September 7th and 14th, with the eggs laid by them, Rev. C. R. N. Burrows. BOARMIA REPANDATA from Pitlochrie, similar to dark forms taken in London, Mr. J. A. Clark. AGRIADES BELLARGUS females taken in Surrey, Sussex, and Kent, from May 26th to July 23rd, 1907. The specimens were unusually blue, the captor suggesting this might be brought about by the inclement weather, Dr. G. G. Hodgson. ABRAXAS ULMATA from Chalfont Road, July 8th, 1907, with black markings almost obsolete, Mr. A. W. Mera. EPINEPHELE TITHONUS from Dawlish, August, 1907, including specimens with abnormally large ocelli on forewings, and additional spots, others lacking the usual central white dots in the ocelli, Mr. C. P. Pickett. COSMOTRICHE POTATORIA from Eastbourne larvæ, dark forms of the female, and one strikingly dark male, Mr. J. Riches. STAUROPUS FAGI, taken at Chorley Wood, July 15th, 1907, Mr. P. H. Tautz. POSSIBLE SECOND-BROOD EXAMPLE OF MIMAS TILLÆ: Mr. Riches reported having observed a spent female of *Mimas tiliae*, on September 14th, at Hornsey.

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*August 22nd*, 1907.—EXHIBITS.—HYRIA MURICATA (AURORARIA) from Wicken and the New Forest, Mr. Harrison, who made some remarks on the variation of the species. SATURNIA PYRI larvæ from continental ova, and DIPTERYGIA SCABRIUSCULA, larvæ, from ova laid by a female taken at Reigate, Mr. Tonge. DICRANURA BICUSPIS, a larva from Tilgate Forest, Mr. L. W. Newman, who pointed out the difference between this and the larva of D. BIFIDA. ARICIA EUMEDON from Gavarnie, Pyrenees, apparently an extreme form of the ab. SUBRADIATA; PLEBEIUS ARGUS (ÆGON) with unusually well-marked spot variation on the underside, Dr. Chapman. CUCULLIA LYCHNITIS, living larvæ, Mr. Rayward, who remarked upon the curious colour differences between captured larvæ and those bred in captivity from ova. CUCULLIA VERBASCI and C. LYCHNITIS larvæ, Mr. Turner, who pointed out the difference in markings. EUPITHECIA DODONEATA, taken on the cliffs at Eastbourne, Mr. R. Adkin, who commented on their occurrence so far from the nearest oak-trees, and suggested that their foodplant had been the evergreen-oak, which grew somewhat near to the place where they were captured. E. OBLONGATA, bred from flower-heads of *Centaurea* at Eastbourne, Mr. R. Adkin. COLEOPHORA ALBICOSTA, cases found on a furze-bush, in Surrey; PARARGE MÆRA larvæ, bred from the ova, and feeding on *Poa annua*, but only in the early morning and in the evening, Mr. A. Sich. *September 12th*, 1907.—EXHIBITS.—LITHOSIA CANIOLA, bred from larvæ, fed upon lettuce, which they would only eat when in a decaying condition, Mr. South. EUGONIA AUTUMNARIA, bred specimens, including two very beautiful dark fulvous forms, the offspring of a pairing between the unique melanic form bred last year and a specimen of the typical form. AGLAIS URTICÆ, including forms with black hindwings, rayed hindwings, and with the discal spots almost obsolete, Mr. L. W. Newman. BANKSIA ARGENTULA, living larvæ. ANTICLEA BADIATA, a series showing much variation in the transverse banding and general coloration, Mr. Goulton. TRIFURCULA IMMUNDELLA, from Surrey, Mr. Sich, who read notes on the habits of the imagines and larvæ, and the characteristics of the ova. AGRIADES CORYDON AB. SYNGRAPHA, from Wiltshire, Mr. South.

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Desiderata.—Filigrammaria.—*Sidney Wilkinson, 6, Stanford Road, Kensington Court, London, W.*

Duplicates.—A. cratægi, Albicolon (fair), L. muscerda and ova, Autumnaria. *Desiderata.*—V. c-album, Aglaia, Epiphron, Davus, Iris, T. pruni, L. sinapis, Aethiops, C. palæmon, Bombyliiformis, Lighiperda, Fascelina, Gonostigma, Pavonia, Fagi, Bifida, Carmelita, Bicuspis, Petasitis, Cannæ, Dictæa, Myricæ, Obsoleta, Orion, Muralis, Fuliginosa, Exigua, Dumerili, Sordida, Connexa.—*W. K. Lister, Great Walton, Eastry, S.O., Kent.*

Duplicates.—Io*, Filipendulæ*, Moneta*, Festucæ*, Pulchrina, Nana*, Bractea (fair), Persicariæ*, Ashworthii*, S. urticæ*, Salicis*, Upsilon*, Baja*, Comes* (Orbona) (Irish and Welsh), Contiguaria*, Boreata (Irish), Repandata* (Irish and Welsh), Ruberata, Multistrigaria* (dark), Biundularia, Dubitata, pupæ of Rubricosa (English and Irish), also shortly O. autumnata* and ova, O. filigrammaria, O. dilutata* and ova, O. christyi* and ova. *Desiderata.*—Various local species and forms.—*J. E. R. Allen, Portora, Enniskillen, Ireland.*

Duplicates.—Ova of black Chi, blue-black Chi, slate-coloured Chi, Chi ab. Olivacea, Testata (chocolate), Testata (yellow), Graminis; pupæ of Herbida (Forres), Bidentata (in numbers, taken wild in town). *Desiderata.*—Ova of Angularia, Erosaria, Tiliaria, Fuscantaria; pupæ of Populi, Tiliæ, Ocellatus, Ziczac, Dictæa.—*C. Harrison, 181, Abingdon Road, Middlesbro'.*

Duplicates.—Larvæ or pupæ of Comitata, Chenopodii, Aversata; imagines of Io, Phragmitidis, Gemina, Morpheus, Lithargyria, Conigera, Hirtaria*. *Desiderata.*—Fine, well-set, on black pins to renew, Rhamni, Euphrosyne, Selene, T. quercûs, Alveolus, Hectus, Lacertula, Acoris, Plumbaria, Strigillaria, Russata, Immanata, Dominula, Rumicis.—*J. Ovenden, Frindsbury, Rochester, Kent.*

Duplicates.—Absinthiata*, Centaureata*, Nanata, Lariciata, Venosata*, Cæsiata, Filigrammaria (fair), Impluviata dark), Apiciaria, Rurea* (dark), H. tripartita*, Chi, Phragmitidis, Impura*, Festiva* vars., Haworthii, Bicoloria, Flavicincta, Ochracea*, and Fulva (fair). *Desiderata.*—Viretata, Pimpinellata, Exiguata, Jasioneata, or offers.—*W. G. Clutten, 132, Coal Clough Lane, Burnley.*

WANTED.—Good photographs or careful drawings of Aberrations, Gynandromorphs,

etc., of any British "Hairstreaks" and "Blues," for reproduction in *The Natural History of the British Butterflies*. Also photos and good drawings of Aberrations and Gynandromorphs of other groups that may be used later as opportunity offers. [Specimens not necessarily British.]—*J. W. Tutt, 119, Westcombe Hill, Blackheath.*

CHANGE OF ADDRESS.—*Percy M. Bright* to "*Fairfield*," *Wimborne Road, Bournemouth.*

MEETINGS OF SOCIETIES.

Entomological Society of London.—11, Chandos Street, Cavendish Square, W., 8 p.m. Meetings—October 16th, November 6th, 20th, December 4th, January 15th (Annual).

The City of London Entomological and Natural History Society.—London Institution, Finsbury Circus, E.C.—The first and third Tuesdays in the month, at 7.30 p.m., except in July and August. (No notices received.)

Toynbee Hall Natural History Society.—Held at Toynbee Hall, Commercial Street, E., Mondays, at 8 p.m.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—The second and fourth Thursdays in each month, at 8 p.m.

North London Natural History Society, The Amherst Club, Amhurst Road, N. November 12th, Autumnal Exhibition; November 26th, December, 10th.

Lancashire and Cheshire Entomological Society.—Meetings at the Royal Institution, Liverpool, on the 3rd Monday in the month from October to April. Hon. Sec., H. R. Sweeting, 6, The Elms, Dingle, Liverpool.

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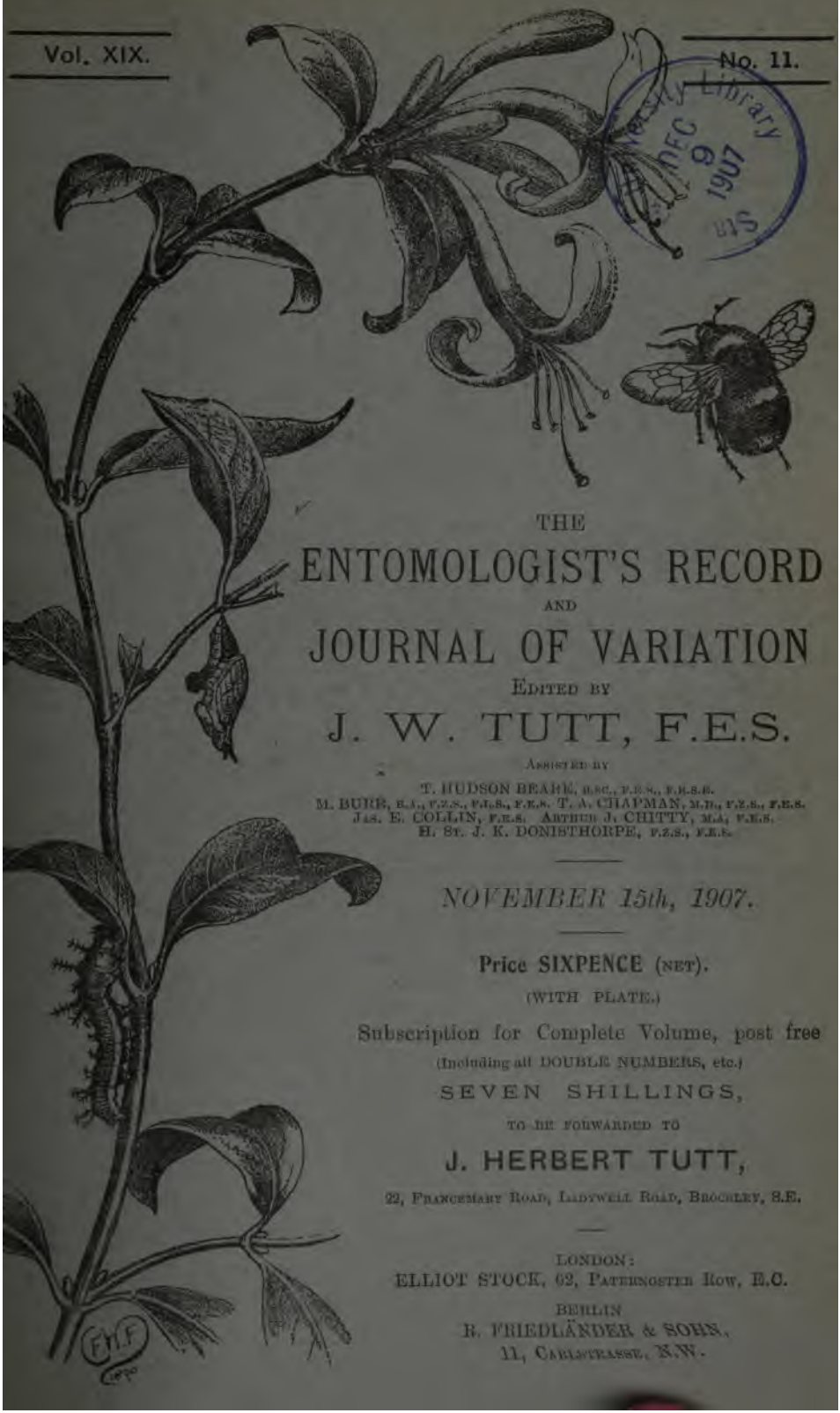
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and Cheshunt. *Eryx ater*, F., Enfield. *Mycetochares bipustulata*, Ill., oak-bark, Epping Forest. *Orchesia micans*, Pz., Enfield, abundant in fungus on ash. *Conopalpus testaceus* var. *vigorsi*, Steph., on the wing, Enfield. *Abdera quadrifasciata*, Curt., running on the trunk of an old beech, Enfield. *Phloeotrya rufipes*, Gyll., several specimens cut out of an oak log, Enfield. *Nacerdes melanura*, L., on pavements and fences, Enfield, *Scraptia fuscula*, Müll., one specimen from hollow ash, Enfield, and one from oak-bark, Epping Forest. *Mordellistena abdominalis*, F., hawthorn, Enfield. *Xylophilus oculatus*, Gyll., extremely abundant on oak logs during August. *Pseudostyphlus pilumnus* was taken commonly by sweeping *Matricaria* at Enfield in June and July. In conclusion I may as well mention the fact that *Hylesinus crenatus*, F., occurs here regularly in the bark of fallen ash boughs. This is interesting, as it usually attacks growing trees, rarely doing sufficient damage to kill the trees, but when fallen timber is attacked, the progeny appears to be much more numerous. I located a great colony of larvæ, and secured one imago, but unfortunately the log was removed before the remainder emerged.

Synopsis of the Orthoptera of Western Europe.

By MALCOLM BURR, B.A., F.L.S., F.Z.S., F.E.S.

(*Continued from* p. 239.)

1. EPHIPPIGERA PROVINCIALIS, Yersin.

Large, of yellowish colour; cerci of the male very short and broad, with a large inner tooth, very attenuate at the apex and ending in a recurved hook. Length of body, 30mm.-37mm. ♂, 30mm.-31mm. ♀; of pronotum, 8mm. ♂, 9·7mm. ♀; of posterior femora, 17mm. ♂, 18mm. ♀; of ovipositor, 25mm.-28mm. ♀.

A rare species, inhabiting that part of Provence which lies between La Chaine des Maures and the sea. In 1888 it multiplied so exceedingly that it did considerable damage to oaks and vines. It is recorded from Hyères, La Louche, Ramatuel, Saint Tropez and Carpiagne.

2. EPHIPPIGERA VITIUM, Serville (=*ephippigera*, Fieb.).

Greenish-red or violet: pronotum arched and rounded; elytra reddish, coarsely veined; cerci of male, long and conical; ovipositor nearly straight, not more than three times as long as the pronotum. Length of body, 22mm.-25mm. ♂, 24mm.-30mm. ♀; of pronotum, 7·2mm.-8·5mm. ♂, 7mm.-8mm. ♀; of posterior femora, 16mm. ♂, of 15mm.-17mm. ♀; of ovipositor, 20mm.-21mm. ♀.

A native of Central Europe. It occurs sparingly in Belgium at Pietersheim, near Lanaeken, in Campine. In France it is rare and local in the north, but common throughout the centre and south; it is recorded as far north as Paris, and also occurs in the Forest of Fontainebleau. In Switzerland it is rare, but is recorded from Freiburg, Bâle and Geneva. It apparently does not occur in Germany. South of the Alps it is found in all the valleys, but does not appear to extend down to the Mediterranean coast. In Austria, it is common near Vienna and from Bisamberg to Semmering, but not in the Tirol. In Spain it is recorded from Potes, Gayangos, Oña and Vitoria. Azam notes a variety which he names *silvicola*, larger and darker in colour, from Var and the Basses-Alpes.

3. EPHIPPIGERA CRUCIGERA, Fieber (=*bitterensis*, Marquet).

Resembles the preceding, but larger, and the pronotum is marked with a black cross; the general colour is bright yellow, merging into brown with yellow lines on the abdomen. Length of body, 30mm. ♂, 28mm. ♀; of pronotum, 9mm. ♂, 10mm. ♀; of posterior femora, 18mm.-21mm. ♂, 21mm. ♀; of ovipositor, 23mm.-25mm. ♀.

Occurs in France, where it is not rare in the south-west; recorded from Béziers, Montpellier, Carcassonne and Narbonne. It is found on vines.

4. EPHIPPIGERA CUNII, Bolivar.

This is the largest of the group of *E. vitium*; it is distinguished by the unequal rugose frons, compressed pronotum, which is produced forwards over the head, by the apically truncate cerci of the male, and by the nearly straight, blunt ovipositor. Length of body, 31mm.-34mm. ♂ and ♀; of pronotum, 11mm.-11·5mm. ♂ and ♀; of posterior femora, 23mm. ♂ and ♀; of ovipositor, 27mm. ♀.

It occurs on the northern slopes of the Pyrenees, at Canigou and Banyuls. In Spain, down the Mediterranean coast to Barcelona; the writer found it commonly on Monseny, where the variety *jugicola*, Bol., occurs. This is somewhat smaller, varying in colour from olive-green to brown; the elytra are darker, the anterior femora somewhat shorter, than the pronotnm, and the cerci of the male more pointed. Length of body 30mm. ♂ and ♀; of pronotum, 9mm. ♂ and ♀; of posterior femora, 16mm. ♂ and ♀; of ovipositor, 26mm. ♀.

This occurs in Catalonia at Ribas, Camprodon, and Monseny.

5. EPHIPPIGERA PERFORATA, Rossi.

Bright green or violet; resembles *E. vitium*, but the fastigium of the vertex is more compressed, especially in the male, the pronotum is flatter, the elytra narrower, and sulphur-yellow on the scapular area; the venation is clearer in the radial field; the supraanal plate of the male is roundly triangulate, and the subgenital lamina of the male has very short styles, and the ovipositor is somewhat longer or more curved. Length of body, 23mm.-26mm. ♂, 28mm. ♀; of pronotum, 6·8mm.-7·2mm. ♂, 7mm.-7·8mm. ♀; of posterior femora, 16mm.-19mm. ♂, 18mm. ♀; of ovipositor, 26mm. ♀.

Rare in France; recorded from Saint-Sever in the Landes, and Gavarnie in the Pyrenees. It occurs in Italy at Voltaggio and Pegli, and in Calabria.

6. EPHIPPIGERA TERRESTRIS, Yersin.

Resembles the preceding, but yellow in colour, with higher elytra and two spines on the anterior tibiæ above; the cerci are bifid at the apex, long and cylindrical. Length of body, 26mm.-28mm. ♂, 29mm. ♀; of pronotum, 9mm. ♂, 8mm. ♀; of posterior femora, 18mm. ♂ and ♀; of ovipositor, 29mm. ♀.

A native of the south of France, occurring at Frèjus and Grasse; also at Bagnols, Montauroux, and Les Escolles.

Azam records a smaller variety, *minor*, in Provence. The length of body in the variety is given as 23mm.-26mm. Azam defines the area where this species occurs as a polygon from Saint Aigulf, by the foot of the Chaines des Maures to Cuers, up to Saint Baume, to Durance, following on to Sisteron; then to the Col d'Allos, down by

Puget-Théniers, Grasse, towards Esterel, on to Saint Raphael. It is commonest in the southern part of this polygon; the smaller specimens are taken in the north, the smallest of all at the Col d'Allos, at Colmars, on the Cheval Blanc, Broves, and Roque Esclapon to Lachens.

7. EPHIPPIGERA ZAPATERI, Bolivar.

Uniform green; pronotum smooth; elytra strongly arched; supraanal plate of male sharply triangular, with long styles. Length of body, 30mm. ♂; of pronotum, 7·5mm. ♂; of posterior femora, 18mm. ♂, of ovipositor, 30mm. ♀.

A native of Spain: Albarracin, Sierra de Cuenca, Montes de Toledo, Escorial, Siles, on trees as well as on shrubs.

8. EPHIPPIGERA PAULINOI, Bolivar.

Distinguished from the preceding by the shorter cerci of the male, and by the slightly longer ovipositor. Length of body, 33mm. ♂, 34mm. ♀; of pronotum, 9mm. ♂, 10mm. ♀; of posterior femora, 22mm. ♂, 24mm. ♀; of ovipositor, 30mm. ♀.

Recorded from Granada.

9. EPHIPPIGERA HISPANICA, Fieber.

Large, yellowish; anal segment of male separated from the supra-anal plate by a transverse fold; ovipositor as long as the posterior femora; feebly reticulate elytra, with large dark areas; cerci slender and conical. Length of body, 30mm. ♂ and ♀; of pronotum, 8·5mm. ♂, 9mm. ♀; of posterior femora, 24mm. ♂ and ♀; of ovipositor, 24mm. ♀.

A Spanish species, occurring only in the south; Huelva, Seville, Cordoba, where it is common in shrubs in summer.

10. EPHIPPIGERA DORSALIS, Fieber
(=*nigromarginata*, Lucas).

Yellowish; with dark bands of square black spots on the abdomen; elytra dark chestnut, with open reticulations, the radial vein not very thick. Length of body, 26mm. ♂, 28mm. ♀; of pronotum, 7·2mm. ♂, 7·2mm.-8mm. ♀; of posterior femora, 18mm. ♂ and ♀; of ovipositor, 28mm.-30mm. ♀.

Recorded from Messina. Occurs also in Algeria.

11. EPHIPPIGERA LONGICAUDA, Bolivar.

Characterised by the long and slender feet; the anterior tibiæ have six spines above; the cerci are as long as the supraanal plate in the male; the ovipositor is longer than in *E. areolaria*, which it resembles. Length of body, 18mm. ♂, 16mm. ♀; of pronotum, 6mm. ♂, 5mm. ♀; of posterior femora, ?; of ovipositor, 19mm. ♀.

Recorded from Ciudad Rodrigo and Salamanca.

12. EPHIPPIGERA BORMANSI, Brunner.

Resembles *E. terrestris*, but smaller; violet in colour; the pronotum is smoother and more rounded, the lower borders are straight, and the supraanal plate of the male is rounded. Length of body, 23mm. ♂, 25mm. ♀; of pronotum, 7mm. ♂, 6·2mm. ♀; of posterior femora, 13mm. ♂, 15mm. ♀; of ovipositor, 24mm. ♀.

An Italian species, discovered by the late Auguste de Bormans at

Madonna del Monte, near Varese, and since taken by Azam at the Cheval Blanc in the Basses-Alpes.

13. Ephippigera areolaria, Bolivar.

Small; cerci of the male shorter than the supraanal plate; ovipositor and feet shorter than in the allied *E. longicauda*. Colour dark, with bright spots and sometimes yellow dorsal stripes. Length of body, 18mm. ♂, 22mm. ♀; of pronotum, 6mm. ♂, 6·5mm. ♀; of posterior femora, 15mm. ♂ and ♀; of ovipositor, 17mm. ♀.

At high elevations in Spain: Albarracin, Madrid, Granada, Serrania de Cuenca, Peñalara, Soria, Oña; and also Camllonc, near Berga in Catalonia.

14. Ephippigera pantingana, Navas.

Size large; green or straw-greenish; cerci of male with blunt point and median tooth; anterior tibiæ with 3-4 spines on outer side, and one median spinule on inner side, which may be obsolete. Ovipositor gently curved, about 3 times as long as pronotum. Length of body, ♂, 2mm., ♂, 30mm. ♀; of pronotum, 7·5mm. ♂, 8mm. ♀; of posterior femora, 20mm. ♂, 21mm. ♀; of ovipositor, 24mm. ♀.

Resembles *E. areolaria* and *E. carinata*, but distinctly larger; distinguished also by the form of the cerci, fewer spines on anterior tibiæ, more sloping metazona of pronotum. Discovered by Father Navas in July on shrubs on Monte Aragon, Spain.

15. Ephippigera carinata, Bolivar.

In this species the side flaps of the pronotum are roundly inserted, and there is a double row of spines on the anterior tibiæ. Length of body, 25mm. ♂, 27mm. ♀; of pronotum, 7·5mm. ♂, 7mm. ♀; of posterior femora, 21mm. ♂, 20mm. ♀; of ovipositor, 21mm.-23mm. ♀.

A native of Central Spain; Aranjuez, in valleys and cultivated places among thorns.

16. Ephippigera saussureana, Bolivar.

Small, yellow or red in colour. Length of body, 25mm., ♂ and ♀; of pronotum, 5mm. ♂ and ♀; of ovipositor, 25mm. ♀.

In Spain, at Burgos and Fuencebadon.

17. Ephippigera diluta, Bolivar.

Rather larger, very variable in colour; ovipositor very long; keels of pronotum appear very sharp, as the disc is rough and the sides are smooth, but there are no real carinæ. Length of body, 30mm.-32mm. ♂ and ♀; of pronotum, 6mm. ♂ and ♀; of ovipositor, 31mm. ♀.

A native of the mountains of Central Spain; common on the Sierra de Guadarrama. Bolivar places *E. gracilis*, Br., here: it is recorded from Peñalara, where only this species and *E. areolaria* occur.

NOTES ON COLLECTING, Etc.

Effect of late season in the Swiss Alps on Leptidia sinapis.—It is quite usual for there to be two broods of *Leptidia sinapis* throughout the Alps of central Europe to an elevation of some 5000ft. One suspects that, as happens at lower elevations in higher latitudes, the

second-brood may be more or less partial, although often in the gross more abundant than the first brood, and possibly the species occurs frequently, as apparently with us in late and cold summers, as a purely single-brooded species. It was our first experience, however, to find the two broods overlapping this year. Near Brugnasco, on August 2nd, at an elevation of 4500ft., several characteristic specimens of the first brood were taken on the outskirts of a pinewood, flying with *Parnassius apollo*, *Erebia goante*, *Plebeius aegon*, *Aricia astrarche*, *Melanargia galathea*, *Brenthis amathusia*, *Argynnis aglaia*, *A. niobe*, etc., as well as a single newly-emerged *Gonepteryx rhamni*. They were, as might be expected, in poor condition, but there was no doubt that they came from over-wintering pupæ. On August 4th, near Piotta, in a locality directly below Brugnasco (probably nearly 1300ft. lower), a few were taken on the outskirts of an alder carr, all again of the first brood except a single male of undoubted second-brood. Near Faido, the next day, in the Piottino ravine, examples of both broods were again taken, two or three males of the first brood, and one male of the second brood. Only one female came under notice altogether, *viz.*, near Brugnasco, on August 2nd.—J. W. Tutt.

Length of life of imago of Ruralis betulæ.—On my return to England on August 23rd, 1907, I found some female *Ruralis betulae* that had apparently emerged during the days immediately preceding. One of these was kept alive for observation, fed on moistened sugar, and allowed to sun itself for an hour or two on most days. It became comparatively used to its surroundings, although a rapid movement caused it to suddenly draw up its wings and jump (rather than drop) as quickly as possible to the bottom of the box in which it was kept. It remained most active and healthy until September 12th, when a little extra moisture in its sugar caused the latter, without being noticed, to form a thick sticky mass; in this it got somewhat entangled, and its walking was affected, whilst, the wings, too, were unfortunately rather involved. A few minutes in the sun, however, seemed to put matters largely right, but it was clear that, on the next day, it did not walk with the freedom it had hitherto shown. This morning I found it moribund, so that, even with the accident, it lived to my knowledge 24 days, and, possibly, but for the untoward circumstance mentioned, might have lived still longer. It would be interesting to know what is the length of life in our British species of butterflies.—J. W. Tutt. *September 16th*, 1907.

Epinephele tithonus in Cumberland.—On August 23rd last I saw this butterfly flying in hundreds with *E. ianira* in a lane between Nethertown and St. Bees. Up to the present this butterfly has been apparently almost unknown as a Cumberland insect.—Jas. Murray, 13, Grosvenor Gardens, Carlisle.

Late appearance of Thymelicus acteon at Lulworth.—On August 24th, I caught some 21 very fair examples of *Thymelicus acteon*, at Lulworth. On the 18th inst., another collector captured 18. These dates, compared with most of those in *A Natural History of British Butterflies*, vol. i., p. 126, appear to be exceptionally late, although a few records for particular years are still later.—H. G. Gregory, Westleigh, Salisbury. *October 25th*, 1907.

Notable captures at Sandown in 1907.—For not the first time in my career as "Research Secretary" of the North London

Natural History Society, the pleasant duty devolves upon me of recording some very interesting captures by our "Associates." The insects recorded below were sent me for identification or verification by my friend, Mr. John Taylor, of Sandown, Isle of Wight, and were duly exhibited at the meeting of the society on November 12th. *Leucania unipuncta* (=*extranea*), a male in fairly good, though not perfect, condition, was taken on September 10th. *Celaena haworthii*, a very unexpected addition to the Isle of Wight fauna, turned up on August 16th; it is an exceptionally large specimen of the brightly-coloured and variegated form, which I believe to represent Curtis' type. *Hadena dissimilis*, a very small second-brood example of the extreme dark form (ab. *confluens*, Ev., *fide* Tutt) was taken on September 2nd. I have myself taken a few of the moderate unicolorous forms (ab. *w-latinum*, Esp.) at Sandown, but have nothing nearly so extreme as Mr. Taylor's example, except from York. All the three specimens were taken at sugar.—Louis B. Prout, F.E.S., The Elms, 246, Richmond Road, N.E. *November 12th*, 1907.

Ruralis betulæ near Heybridge.—It may be of interest to record that a *Ruralis betulae* was caught on October 3rd near here, as it is an addition to the recorded Essex localities noted in the *Nat. Hist. Brit. Butts.*, ii., pt. 12, p. 316. It was the last day of the fine dry weather. I was out shooting and picked it off a flower. I intended going next day to look for more, but that night the rain set in and continued for some days, so that it was of no use to do so.—E. E. Bentall, F.E.S., The Towers, Heybridge, Essex. *November 8th*, 1907.

Introduction of Anosia plexippus.—I want to introduce this butterfly here, and I should be much obliged if any of the readers of the *Entomologist's Record* could assist me in obtaining a quantity of ova or pupa. Perhaps American readers would be able to assist. Failing the above species, any other North American species, having a foodplant which is well distributed here, would answer my purpose. —Id.

COLEOPTERA.

Magdalis phlegmatica, Herbst, in England.—It will be worth while to record the occurrence of this weevil south of the Tweed, as hitherto it has been reputed a Scotch species, the only note of its having been taken in an English locality being apparently that given by Canon Fowler (*Brit. Col.*, vol. v., p. 397). The record in question is of a single specimen from the Portsmouth district, to which, however, some doubt attaches in the opinion of Canon Fowler. While collecting on a "moss" at Kirkhampton, near Carlisle, in May last, I swept two specimens from long herbage on the banks of a little stream overhung by fir-trees, but, although I beat the trees on that and two subsequent occasions, no further specimens resulted. I hope, however, to meet with the species again another season. Three other species of *Magdalis* occur in Cumberland—all sparingly; *carbonaria*, L., by beating birch at Orton woods, *armigera*, Faure, in the Gelt valley and Barron Wood, and *pruni*, L., in Barron Wood also. The late T. C. Heysham, the pioneer of entomology in Cumberland, took both *M. carbonaria* and *M. armigera* on the West Walks of Carlisle, probably on trees in some of the gardens there.—F. H. Day, F.E.S., 151, Goodwin Terrace, Carlisle. *October 25th*, 1907.

VARIATION.

CIDARIA PICATA AB. LACTEOMARGINATA, RAYNOR.—With reference to Rev. G. H. Raynor's record (*anteà*, p. 239), it may be interesting to record that I bred a similar specimen in September, 1906, amongst a series reared from Torquay ova. I have compared the specimen with Mr. Raynor's, and find both quite alike.—V. ERIC SHAW, 20, Salisbury Road, Bexley, Kent. *October 28th*, 1907.

CURRENT NOTES.

Our esteemed contributor, Mr. P. A. H. Muschamp, has removed from Geneva to Staefa, on the Lake of Zürich, having become the Principal of the International College there.

We never saw such a jam of "gooseberries" as at Stevens' room on October 22nd, and November 5th, when Mr. Raynor's collection was sold. Nor were there wanting samples of the gooseberry fool, mellowed though they were by some of that cream, which regards these fine aberrations as matters of scientific interest, and not as so many say, postage stamps. Besides long series of *A. grossulariata* in store-boxes, there were especially two drawers containing some 170 specimens, which sold for nearly £200. It has been assumed that the value of these specimens was partly due to the fact that they were the examples which Messrs. Raynor and Doncaster had specially discussed as bearing on questions of heredity, worked out by pedigree breeding. This, of course, was not so, as Mr. Raynor presented to the Cambridge University Museum, two cabinet-drawers full of *grossulariata* (chiefly ab. *lacticolor*), containing all the families which he had reared for heredity purposes, and which were described by Mr. Doncaster and himself. This sale contained no members of such families. Their value under Mr. Stevens' hammer was, however, certainly increased by all being furnished with aberrational names. Nor were these always alien to the *Genius loci*, for a specimen of var. *chalcobares* (laden with brass), produced brass to the amount of £6, and a series of *chalcozona* (brass-girdled) from Lancashire, from two to three guineas a specimen. Amongst others, *nigrolutea* female, sold for £6 10s., *lacteasparsa* female, for £5 10s., *nigrosparsata* male £3, female £5 15s., *melanozona* male, £6 10s., *varleyata* female, £1 10s. to £4 10s., a *lacticolor* male £4, female £5 15s., and others £2 to £3, *lutealacticolor* £3, and so on.

Of other species *Xylina semibrunnea* seemed to be prized, and *Cucullia gnaphalii* was worth about a guinea a pair; aberrations of *Spilosoma lubricipeda* went mostly for a few shillings, but a few specimens sold each for £3 3s., £1 1s., £1 15s., £2; a pair of *Drepana harpagula* (*sicula*) £1 5s., aberrations of *Angerona prunaria*, at all prices up to £3 3s. a pair, and two were valued at £2 5s. and £3 15s. respectively. *Cidaria picata* ab. *lacteomarginata* £1, single specimens of *Strenia clathrata* were worth £1, £1, £2 7s. 6d., £2 5s., £1 8s., £1 10s., £2 5s., £1 12s. 6d., £1 10s., and others downwards. Most of the collection brought fair but not startling prices.

On the afternoon and evening of November 2nd, several members of the South London Entomological and Natural History Society were invited by Mr. W. Kaye to spend a few hours socially at "Caracas," Ditton Hill, Surbiton. Tea was served by Mrs. Kaye

at 4 p.m., and after an examination of some of Mr. Kaye's lepidopterological treasures, and the informal discussion of many matters relating to entomology, supper was served at 8 p.m. A pleasant evening terminated at about 11 p.m., most of the visitors leaving between 10.15 p.m. and 11 p.m., to catch London trains. Among others present were Messrs. F. B. Carr, Hugh Main, A. W. Mera, A. W. Rayward, Percy Richards, Scollick, H. J. Turner, J. W. Tutt.

The last monthly meeting of the Entomological Club was held at 58, Kensington Mansions, South Kensington, on Thursday, November 21st, 1907, at half-past six o'clock, when Mr. Horace Donisthorpe was the host. Tea was served between 6.30 p.m. and 7.0 p.m. by Mrs. Donisthorpe, after which an adjournment was made to Mr. Donisthorpe's museum. By 8.30 p.m., when supper was served, a large number of members and friends were present, among whom we noticed—the Rev. F. D. Morice, Dr. F. Dixey, Lt.-Col. Bingham, Col. Swinhoe, Commander J. J. Walker, Messrs. R. Adkin, E. E. Austin, J. E. Collin, J. C. Dollman, H. Willoughby Ellis, A. H. Jones, W. Kaye, W. E. Sharp, J. R. Tomlin, J. W. Tutt, G. H. Verrall, etc. A most enjoyable evening was spent, many of the visitors staying on until near midnight.

It is proposed to hold a conversazione of the Entomological Society of London about May next. This is quite a new departure for the premier society, and a strong committee has the preliminary arrangements in hand.

SOCIETIES.

City of London Entomological Society.—*October* 1*st*, 1907.—Exhibits.—Leucania turca bred from Brentwood ova. Nonagria cannæ ova *in situ* on *Typha*. The exhibitor explained that the female is provided with special hooks, which enable her to lift the natural folds of the cuticle and deposit the ova beneath, Mr. H. M. Edlesten. Melitæa aurinia (artemis), showing parallel variation in widely separated districts, such as Central Ireland and South Wales, Devon and South Wales, etc.; also sketches of Adopæa thaumas observed resting in the sun, in the position assumed by Nisoniades tages, when at rest at night, Dr. G. G. C. Hodgson. Aglais urticæ, a very variable series including specimens with the black costal blotches confluent (near ab. ichnusoides), Mr. L. W. Newman. Dianthœcia luteago var. ficklini, bred July 3rd 1907, from a larva found near Bude at the end of July 1906, on roots of *Silene maritima*, Mr. L. B. Prout. Agrotis puta from North London, with forewings suffused with dark brown, Mr. J. Riches. Polia nigrocincta, bred from North Cornwall larvæ, reared upon apple and sallow, Mr. L. A. E. Sabine. *October* 15*th*, 1907.—Exhibits.—Lasiocampa var. callunæ, male, Dalnaith Bridge, N.B., with the usual pale bands suffused with brown colour, Mr. J. A. Clark. Cœnobia rufa, a dark red-brown form from Dorset, Mr. H. M. Edelsten. Polyommatus alexis, from Surrey and Aberdeen, those from the latter district being the larger, and more intense in colour, Mr. T. H. L. Grosvenor. Polyommatus alexis, taken during 1907, showing an unusually large proportion of blue females, Dr. Hodgson. Himera pennaria male from ova laid by a typical female paired with melanic male from Dover, a fair number of the series being melanic. Polia xanthomista var. nigrocincta bred from North Cornwall ova, Mr. J [illegible] xo-

CAMPA CRACCÆ from North Cornwall and North Devon, 1907, all being of the grey form, with no trace of the brownish coloration characteristic of specimens taken some years ago in the latter district; Mr. L. B. Prout. MACROGASTER ARUNDINIS, Wicken, mid-June, 1907, a long series, Mr. R. G. Todd. LEUCANIA VITELLINA, L. PUTRESCENS, and HELIOTHIS PELTIGERA from Torquay, 1907, also for Mr. E. C. Goulton, a long and extraordinarily variable series of HYPSIPETES ELUTATA bred from Surrey larvæ; Mr. A. J. Willsdon.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*October* 21*st*, 1907.—EXHIBITS.—Mr. B. H. Crabtree showed a fine series of the local melanic form of BOARMIA REPANDATA from Penmaenmawr, the females especially showing the white blotches characteristic of this local race; B. GEMMARIA var. PERFUMARIA from Manchester; aberrations of ANGERONA PRUNARIA from Monkswood; APLECTA NEBULOSA ab. ROBSONI from Delamere Forest; AGROTIS ASHWORTHII from Penmaenmawr; and CHARICLEA UMBRA from Sidmouth. Mr. Robert Tait, Jr., exhibited AGROTIS RIPÆ from South Wales coast; A. ASHWORTHII from North Wales, a series captured at rest; HEMEROPHILA ABRUPTARIA, the chocolate form, from the London district; LOBOPHORA VIRETATA, ANTICLEA DERIVATA, and LARENTIA SALICATA from Lake side, Westmoreland; DIANTHŒCIA CONSPERSA and EUPITHECIA JASIONEATA from Abersoch. PRESERVED LARVÆ.—Dr. William Bell had a drawer of beautifully preserved and mounted larvæ of lepidoptera, in which he had been able to preserve the green coloration in such species as SATURNIA PAVONIA and PAPILIO MACHAON, without recourse to artificial aid. Dr. Bell had also been able to dry the plants on which the larvæ were mounted in their natural form and colour. LEPIDOPTERA.—The same member further exhibited a box of Wicken insects, which included SPILOSOMA URTICÆ and an example of TAPINOSTOLA EXTREMA (CONCOLOR) from that district. [It is surely well-known that this species does not exist in the Wicken district; and it appears to be a great pity that it should be so erroneously recorded.—ED.] Aberrations of ARCTIA CAIA, and a dark specimen of ENNOMOS ALNIARIA from Wallasey. ABRAXAS GROSSULARIATA.—Mr. F. N. Pierce, minor aberrations of ABRAXAS GROSSULARIATA from Wallasey. CELERIO GALLII REPUTED IN 1907.—Mr. W. Mallinson showed a beautiful water-colour drawing of a larva of CELERIO GALLII, one of two found at Wallasey this year. [More information of the find of two specimens in a year in which the species appears to be otherwise entirely absent in this country and other parts of western Europe is desirable.—ED.] LYCÆNIDS, ETC.—Mr. H. R. Sweeting exhibited AGRIADES BELLARGUS and ab. CÆRULEA from Eastbourne; AGRIADES CORYDON and ab. SYNGRAPHA taken by himself in Surrey; a series of NOCTUA CASTANEA and var. NEGLECTA from Delamere; N. GLAREOSA and N. BRUNNEA also from Delamere; MOMA ORION from the New Forest. GEOMETRID ABERRATIONS, ETC.—Mr. W. Mansbridge, a long bred series of BOARMIA REPANDATA from Delamere; a bred series of ODONTOPERA BIDENTATA from Wakefield, including var. NIGRA and diaphanous specimens; series of NYSSIA LAPPONARIA, ANARTA MELANOPA, and A. CORDIGERA from Rannoch. *November* 18*th*, 1907.—LECTURE ON "THE ANDROCONIAL SCALES OF BUTTERFLIES," by Mr. F. N. Pierce, who explained that these scales were only found upon the males of the various species, and were even in that sex uncertain in their appearance, *e.g.*, they appeared to be entirely absent in the large number of Lycænid species which had brown males. Mr. Pierce

described a hitherto unobserved scale, that he had discovered when examining the male of *Aricia astrarche*, and which appeared to be confined to a very small area, on the underside of the forewings, at the extreme base of the inner margin, and where it was found only in small numbers. The lecture was fully illustrated by micro-photographs of the actual scales, shown by means of a lantern. EXHIBITS.—PYGÆRA CURTULA: From Ireland, one specimen showing failure of the brown scales at the tips of the forewings. DELAMERE LEPIDOPTERA: Bred series of GEOMETRA PAPILIONARIA and ELLOPIA PROSAPIARIA, the latter showing the dusky greyish suffusion characteristic of the locality.

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*October 24th*, 1907.—EXHIBITS.—AGROTIS ASHWORTHII, a series bred from larvæ collected in North Wales, at Easter (Easter Monday, April 1st, 1907), including ab. VIRGATA, Messrs. Harrison and Main. MELANIPPE GALIATA, a bred series, ova from Eastbourne, with notes on the variation shown, Mr. R. Adkin. SWAMMERDAMMIA CÆSIELLA ab. GRISEOCAPITELLA: Leaves of birch showing the web, feeding-gallery, and cocoons, with notes on the larval habits; MELANARGIA GALATHEA ab. LEUCOMELAS from Gavarnie; ARICIA ASTRARCHE var. ALPINA from St. Moritz; ABRAXAS GROSSULARIATA, with but few traces of yellow, and extended and coalesced black markings; POLYOMMATUS ICARUS ab. CLARA from Effingham; EUPITHECIA OBLONGATA ab. CENTRALISATA (?), bred from golden-rod, Woolwich; MALACOSOMA CASTRENSIS, a dwarf, measuring only 24mm., from Essex; ANTHROCERA FILIPENDULÆ, with the sixth spot much reduced in size and brightness, and also very clearly divided by the dark nervure, taken at Chatham, July, 1907, Mr. Turner. AGRIADES BELLARGUS, without the usual discoidal spot on the underside, Mr. Grosvenor. HYPSIPETES SORDIDATA (=ELUTATA), from various localities, including fine red forms. AMORPHA POPULI, another gynandromorph. AGLAIS URTICÆ, two more of the abnormal race before exhibited and recorded, Mr. L. Newman, who also recorded the occurrence of black aberrations of OPORABIA DILUTATA and CHEIMATOBIA BRUMATA, in north Kent.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 6th*, 1907.—RARE COLEOPTERON IN LONDON: A specimen of the longicorn beetle, *Acanthocinus aedilis*, L., a species common at Rannoch, but found in Gray's Inn Road, Mr. A. H. Jones. NEW SPECIES OF PINACOPTERYX: Male and female specimens of a new *Pinacopteryx*, discovered by Mr. S. A. Neave in northern Rhodesia. The female resembled that of *P. rubrobasalis*, but the male was quite distinct. Both sexes of *P. rubrobasalis* and the female of Mr. Neave's species were stated to be mimics of *Mylothris agathina*, Dr. F. A. Dixey. BUTTERFLIES FROM THE AISNE: *Limenitis populi* and ab. *tremulae*, with intermediate forms, taken this year at Laon, and a series of *Chrysophanus hippothoë* from the same region, the females displaying a wide range of variation for so restricted a locality as that in which they were captured, Mr. W. G. Sheldon. INSECTS FROM DEVON: A fully-developed example of *Mesovelia furcata*, M. and R., from Slapton, South Devon, and *Thamnotrizon cinereus* from Lynmouth, North Devon, Mr. G. C. Champion. VARIATION IN APLECTA NEBULOSA: A case of *Aplecta nebulosa*, arranged to show the great range of variation of this species in Delamere Forest; with series from Epping Forest, North Cornwall, and the New Forest for comparison. The Cornish and New Forest insects were of the light

grey colour, which is the prevailing form in the west and south of England, with the exception of the neighbourhood of London, where a dark grey form is found, as shown in the series from Epping Forest. The Delamere Forest insects ranged from a rather light colour to a melanic form, with intermediates, showing a complete gradation from one form to the other. The lighter insects were bred very sparingly from collected larvæ, from 10 to 11 per cent. of melanic forms agreeing more or less closely with the form *robsoni*, Collins, being obtained, the remainder, about 90 per cent., disclosing the dark grey form, Mr. A. Harrison and Mr. Hugh Main. RARE COLEOPTERA: Two males of *Cryptocephalus bipunctatus*, taken at Niton in the Isle of Wight, in July, 1907, while sweeping the grass on the slopes of the Undercliff. The specimens were two forms or varieties which were understood to be well-known on the continent, although neither had ever been found in Britain before. No other example was observed, although the spot was well worked. The locality seemed to be a strange one for this beetle, as there were no hazel or birch trees in the neighbourhood, Mr. Mitford. Mr. Mitford also showed *Paracymus aeneus*, Germ., which he had obtained from Mr. Harwood of Colchester, who had believed these specimens to be *P. nigroaeneus*. The examples shown were captured on the North Essex coast in June, 1898, and there could be no doubt that *P. aeneus* must be regarded as a British beetle, although Canon Fowler states, in his *British Coleoptera*, that we do not possess the true *P. aeneus*. He also exhibited a specimen of the very rare *Lathrobium rufipenne*, taken by him at Niton, Isle of Wight, in July, 1906, a specimen of the rare *Ceuthorhyncus viduatus*, taken by him at Brading, Isle of Wight, in July, 1907, and a specimen of *Cis dentatus*, taken by him at Sandown, Isle of Wight, in July, 1906, and observed that this species, although well-known on the continent, had never before been recorded in Britain.

THE HAUNT OF PERONEA CRISTANA.

Dedicated to J. A. CLARK, F.E.S.

WHERE thick-set stand the eldest Hawthorn trees,
Gray with gnarled lichen; and one scarcely sees,
So dark-entangled are their wasted boughs,
The healthful sunbeams enter to arouse
The psyched gnats to gambol, or to enlighten
The mesh of silvery webs, that else might brighten
This obscure haunt with glistening tapestry:—
In such a gloom dwells she, our Beauty shy!

Ah! hast thou tracked her to the lone recess,
Wherein she wills to enshroud her loveliness
Even from her kindred, not mere mortal eyes?

The mellowing August sun reposeful lies
On the outstretched plain, and warms to deeper green
The long grass round the thickets, that between
Straight hoary oak-boles guard on either side
An emerald glade. Here, surely here, must ride
Oberon with Titania, their gay court aglee
At note of the hunter's horn: full many a bee
Here heavy with sweetness weighs the bramble down;

While nymph by nymph flits sportive here to crown
Rich woodbine, plumy clematis, or the fruit
Ripening where erst the rose blushed at the suit
Of amorous lovers; Dryad Paphia, see,
Aegeria, soaring Iris, Hyale
Strayed from the sea-down inland to the feast—
Fair, wanton company—how fair the least!

But 'mid these revels vainly our Nymph we track:
Proud on their 'lurements, ah! she turns her back,
Wrapt in lone contemplation—anchorite,
Motionless within her cell gloomy as night,
She stirs not, nor hearkens, nor vouchsafes a space
To lend to this pageant her protean grace.

From all her fellows she though clad most rarely
Shrouds her strange beauty. You must enter, barely
Breathing, her grim environment. Now wave
The enchanter's wand, heedless your flesh to save
From many a savage thorn and rasping bough.
Ah! she is startled, see: she flies! Ah! now
You think to embrace her! Vision of Beauty, hither,
Hither! I hold thee! . . . . . .

Fled, Cristana!

Whither?

SELWYN IMAGE.

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The Entomologists's Record and Journal of Variation.

VOL. XVIII.

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